

書籍の複製適正性の評価に関する研究

田 野 周 典



（昭和47年）

産駒の成績調査値の予測に関する研究

昭和47年度産駒の成績調査値の予測に関する研究は、昭和46年度産駒の成績調査値の予測に関する研究に引き続き、昭和46年度産駒の成績調査値の予測に関する研究の成果を踏まえ、昭和47年度産駒の成績調査値の予測に関する研究を行った。昭和46年度産駒の成績調査値の予測に関する研究の成果は、昭和46年度産駒の成績調査値の予測に関する研究の成果を踏まえ、昭和47年度産駒の成績調査値の予測に関する研究を行った。

昭和47年度産駒の成績調査値の予測に関する研究は、昭和46年度産駒の成績調査値の予測に関する研究に引き続き、昭和46年度産駒の成績調査値の予測に関する研究の成果を踏まえ、昭和47年度産駒の成績調査値の予測に関する研究を行った。昭和46年度産駒の成績調査値の予測に関する研究の成果は、昭和46年度産駒の成績調査値の予測に関する研究の成果を踏まえ、昭和47年度産駒の成績調査値の予測に関する研究を行った。

田 野 昌 茂

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© 2004 Blackwell Publishing Ltd *Journal of Internal Medicine* 255: 103–110

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Abstract

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

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Fig. 1. Dependence of the rate of polymerization (R_p) on the concentration of the initiator (C_i) for different temperatures.

It is known that the rate of polymerization is proportional to the concentration of the initiator raised to a certain power. This is expressed by the equation:

where n is the order of the reaction with respect to the initiator. The order of the reaction is determined by the method of initial rates. The results are shown in Table I.

From Table I, it can be seen that the order of the reaction with respect to the initiator is 1.5 for all temperatures. This indicates that the reaction is of the 1.5th order with respect to the initiator. The rate of polymerization increases with the concentration of the initiator raised to the 1.5th power. This is in agreement with the theoretical results obtained by the method of initial rates.

The results of the study of the dependence of the rate of polymerization on the concentration of the initiator for different temperatures are shown in Figure 1. It can be seen that the rate of polymerization increases with the concentration of the initiator for all temperatures. The rate of increase is more pronounced at higher temperatures.



Fig. 2. Dependence of the rate of polymerization (R_p) on the concentration of the initiator (C_i) for different temperatures.

It is known that the rate of polymerization is proportional to the concentration of the initiator raised to a certain power. This is expressed by the equation:

RESULTS AND DISCUSSION

The results of the study of the dependence of the rate of polymerization on the concentration of the initiator for different temperatures are shown in Figure 1. It can be seen that the rate of polymerization increases with the concentration of the initiator for all temperatures.

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Вспомогательная функция $\Phi(x)$ удовлетворяет уравнению $\Phi'' + \Phi = 0$ (рис. 1, б), для которой известны следующие граничные условия: $\Phi(0) = 0$, $\Phi(1) = 0$, $\Phi'(0) = 1$, $\Phi'(1) = 0$. Решив уравнение (1), найдем функцию $\Phi(x)$ и подставим ее в (2). Тогда получим решение задачи (1) в виде

$$u(x) = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \cos 2\pi x \right) \quad (3)$$

которое удовлетворяет всем условиям задачи (1).

$$u(x) = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \cos 2\pi x \right) \quad (4)$$

Из (4) видно, что функция $u(x)$ удовлетворяет всем условиям задачи (1) и является решением задачи (1).

$$u(x) = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \cos 2\pi x \right) \quad (5)$$

Из (5) видно, что функция $u(x)$ удовлетворяет всем условиям задачи (1) и является решением задачи (1).

Итак, мы получили решение задачи (1) в виде (3). Это решение удовлетворяет всем условиям задачи (1) и является решением задачи (1).

Вспомогательная функция $\Phi(x)$ удовлетворяет уравнению $\Phi'' + \Phi = 0$ (рис. 1, б), для которой известны следующие граничные условия: $\Phi(0) = 0$, $\Phi(1) = 0$, $\Phi'(0) = 1$, $\Phi'(1) = 0$. Решив уравнение (1), найдем функцию $\Phi(x)$ и подставим ее в (2). Тогда получим решение задачи (1) в виде



Fig. 1. (a) Graph of the function $u(x)$ on the interval $[0, 1]$. (b) Graph of the function $\Phi(x)$ on the interval $[0, 1]$.

Из (4) видно, что функция $u(x)$ удовлетворяет всем условиям задачи (1) и является решением задачи (1). Это решение удовлетворяет всем условиям задачи (1) и является решением задачи (1).

Итак, мы получили решение задачи (1) в виде (3). Это решение удовлетворяет всем условиям задачи (1) и является решением задачи (1).



Fig. 1. Dependence of the rate of polymerization (R_p) on the concentration of the initiator (C_i) for the polymerization of styrene in benzene at 50°C.



Fig. 2. Dependence of the rate of polymerization (R_p) on the concentration of the monomer (C_m) for the polymerization of styrene in benzene at 50°C. The concentration of the initiator (C_i) is constant: (a) $C_i = 0.001$; (b) $C_i = 0.002$; (c) $C_i = 0.003$.

The dependence of the rate of polymerization (R_p) on the concentration of the monomer (C_m) is shown in Fig. 2. The dependence of R_p on C_m is linear, with a slope of 1.0. The dependence of R_p on C_i is also linear, with a slope of 1.0. The dependence of R_p on C_m is independent of the concentration of the initiator (C_i).



Fig. 3. Dependence of the rate of polymerization (R_p) on the concentration of the monomer (C_m) for the polymerization of styrene in benzene at 50°C. The concentration of the initiator (C_i) is constant: (a) $C_i = 0.001$; (b) $C_i = 0.002$; (c) $C_i = 0.003$.

The dependence of the rate of polymerization (R_p) on the concentration of the monomer (C_m) is shown in Fig. 3. The dependence of R_p on C_m is linear, with a slope of 1.0. The dependence of R_p on C_i is also linear, with a slope of 1.0. The dependence of R_p on C_m is independent of the concentration of the initiator (C_i).

The dependence of the rate of polymerization (R_p) on the concentration of the monomer (C_m) is shown in Fig. 4. The dependence of R_p on C_m is linear, with a slope of 1.0. The dependence of R_p on C_i is also linear, with a slope of 1.0. The dependence of R_p on C_m is independent of the concentration of the initiator (C_i).

The dependence of the rate of polymerization (R_p) on the concentration of the monomer (C_m) is shown in Fig. 5. The dependence of R_p on C_m is linear, with a slope of 1.0. The dependence of R_p on C_i is also linear, with a slope of 1.0. The dependence of R_p on C_m is independent of the concentration of the initiator (C_i).



Fig. 2. Relationship between the logarithm of the number of bacteria and the logarithm of the number of bacteria. The left plot is labeled "lg N = 0.00" and the right plot is labeled "lg N = 0.0001".

Figure 3: Relationship between the logarithm of the number of bacteria and the logarithm of the number of bacteria.

The relationship between the logarithm of the number of bacteria and the logarithm of the number of bacteria is shown in Figure 3. The left plot is labeled "lg N = 0.00" and the right plot is labeled "lg N = 0.0001". Both plots show a positive correlation between the two variables. The data points are represented by open circles, and the fitted curves are shown as solid lines. The curves are sigmoidal in shape, indicating a non-linear relationship between the two variables.



Fig. 4. Relationship between the logarithm of the number of bacteria and the logarithm of the number of bacteria. The left plot is labeled "lg N = 0.00" and the right plot is labeled "lg N = 0.0001".



Fig. 5. Relationship between the logarithm of the number of bacteria and the logarithm of the number of bacteria. The left plot is labeled "lg N = 0.00" and the right plot is labeled "lg N = 0.0001".



Fig. 10. Relationship between $\log_{10}(1 + 10000 \cdot (1 - R^2))$ and $\log_{10}(1 + 10000 \cdot (1 - R^2))$ for three different values of R^2 . The y-axis is $\log_{10}(1 + 10000 \cdot (1 - R^2))$ and the x-axis is $\log_{10}(1 + 10000 \cdot (1 - R^2))$. The data points are plotted for $R^2 = 0.1$, $R^2 = 0.2$, and $R^2 = 0.3$.



Fig. 11. Relationship between $\log_{10}(1 + 10000 \cdot (1 - R^2))$ and $\log_{10}(1 + 10000 \cdot (1 - R^2))$ for three different values of R^2 . The y-axis is $\log_{10}(1 + 10000 \cdot (1 - R^2))$ and the x-axis is $\log_{10}(1 + 10000 \cdot (1 - R^2))$. The data points are plotted for $R^2 = 0.1$, $R^2 = 0.2$, and $R^2 = 0.3$.

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Fig. 12. Relationship between $\log_{10}(1 + 10000 \cdot (1 - R^2))$ and $\log_{10}(1 + 10000 \cdot (1 - R^2))$ for three different values of R^2 . The y-axis is $\log_{10}(1 + 10000 \cdot (1 - R^2))$ and the x-axis is $\log_{10}(1 + 10000 \cdot (1 - R^2))$. The data points are plotted for $R^2 = 0.1$, $R^2 = 0.2$, and $R^2 = 0.3$.

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Figure 1

图 1 为图 1(a) 和图 1(b) 所示的两种不同结构的微腔。图 1(a) 为一种简单的微腔，其结构为在衬底上生长一层厚度为 d 的介质层，然后在介质层上生长一层厚度为 h 的金属层。图 1(b) 为一种复杂的微腔，其结构为在衬底上生长一层厚度为 d 的介质层，然后在介质层上生长一层厚度为 h 的金属层，并在金属层上生长一层厚度为 g 的介质层。图 1(c) 为一种更复杂的微腔，其结构为在衬底上生长一层厚度为 d 的介质层，然后在介质层上生长一层厚度为 h 的金属层，并在金属层上生长一层厚度为 g 的介质层，并在介质层上生长一层厚度为 f 的金属层。图 1(d) 为一种更复杂的微腔，其结构为在衬底上生长一层厚度为 d 的介质层，然后在介质层上生长一层厚度为 h 的金属层，并在金属层上生长一层厚度为 g 的介质层，并在介质层上生长一层厚度为 f 的金属层，并在金属层上生长一层厚度为 e 的介质层。



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본 연구는 한국연구재단의 지원에 의하여 실시되었음(과제번호: 2017-00000-A01016). 본 연구의 일부 결과는 제1저자 김민준의 석사학위논문(2018)에 실려 있음.

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Journal of Management Inquiry 18(6)

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1. $\mathcal{A}$ is a $\mathcal{C}^*$ -algebra, $\mathcal{B}$ is a $\mathcal{C}^*$ -subalgebra of $\mathcal{A}$, and $\mathcal{C}$ is a $\mathcal{C}^*$ -subalgebra of $\mathcal{B}$. Then $\mathcal{C}$ is a $\mathcal{C}^*$ -subalgebra of $\mathcal{A}$. (This is a special case of the following theorem.)

doi:10.1371/journal.pone.0142020.g002

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For example, the first two terms in the series (1) are $\frac{1}{2} \ln 2$ and $\frac{1}{4} \ln 2$, which are 0.34657 and 0.17329, respectively. The third term is $\frac{1}{8} \ln 2$, which is 0.08664. The fourth term is $\frac{1}{16} \ln 2$, which is 0.04332. The fifth term is $\frac{1}{32} \ln 2$, which is 0.02166. The sixth term is $\frac{1}{64} \ln 2$, which is 0.01083. The seventh term is $\frac{1}{128} \ln 2$, which is 0.00541. The eighth term is $\frac{1}{256} \ln 2$, which is 0.00271. The ninth term is $\frac{1}{512} \ln 2$, which is 0.00135. The tenth term is $\frac{1}{1024} \ln 2$, which is 0.00068. The eleventh term is $\frac{1}{2048} \ln 2$, which is 0.00034. The twelfth term is $\frac{1}{4096} \ln 2$, which is 0.00017. The thirteenth term is $\frac{1}{8192} \ln 2$, which is 0.00009. The fourteenth term is $\frac{1}{16384} \ln 2$, which is 0.00004. The fifteenth term is $\frac{1}{32768} \ln 2$, which is 0.00002. The sixteenth term is $\frac{1}{65536} \ln 2$, which is 0.00001. The seventeenth term is $\frac{1}{131072} \ln 2$, which is 0.00000. The eighteenth term is $\frac{1}{262144} \ln 2$, which is 0.00000. The nineteenth term is $\frac{1}{524288} \ln 2$, which is 0.00000. The twentieth term is $\frac{1}{1048576} \ln 2$, which is 0.00000. The twenty-first term is $\frac{1}{2097152} \ln 2$, which is 0.00000. The twenty-second term is $\frac{1}{4194304} \ln 2$, which is 0.00000. The twenty-third term is $\frac{1}{8388608} \ln 2$, which is 0.00000. The twenty-fourth term is $\frac{1}{16777216} \ln 2$, which is 0.00000. The twenty-fifth term is $\frac{1}{33554432} \ln 2$, which is 0.00000. The twenty-sixth term is $\frac{1}{67108864} \ln 2$, which is 0.00000. The twenty-seventh term is $\frac{1}{134217728} \ln 2$, which is 0.00000. The twenty-eighth term is $\frac{1}{268435456} \ln 2$, which is 0.00000. The twenty-ninth term is $\frac{1}{536870912} \ln 2$, which is 0.00000. The thirtieth term is $\frac{1}{1073741824} \ln 2$, which is 0.00000. The thirty-first term is $\frac{1}{2147483648} \ln 2$, which is 0.00000. The thirty-second term is $\frac{1}{4294967296} \ln 2$, which is 0.00000. The thirty-third term is $\frac{1}{8589934592} \ln 2$, which is 0.00000. The thirty-fourth term is $\frac{1}{17179869184} \ln 2$, which is 0.00000. The thirty-fifth term is $\frac{1}{34359738368} \ln 2$, which is 0.00000. The thirty-sixth term is $\frac{1}{68719476736} \ln 2$, which is 0.00000. The thirty-seventh term is $\frac{1}{137438953472} \ln 2$, which is 0.00000. The thirty-eighth term is $\frac{1}{274877906944} \ln 2$, which is 0.00000. The thirty-ninth term is $\frac{1}{549755813888} \ln 2$, which is 0.00000. The fortieth term is $\frac{1}{1099511627776} \ln 2$, which is 0.00000. The forty-first term is $\frac{1}{2199023255552} \ln 2$, which is 0.00000. The forty-second term is $\frac{1}{4398046511104} \ln 2$, which is 0.00000. The forty-third term is $\frac{1}{8796093022208} \ln 2$, which is 0.00000. The forty-fourth term is $\frac{1}{17592186044416} \ln 2$, which is 0.00000. The forty-fifth term is $\frac{1}{35184372088832} \ln 2$, which is 0.00000. The forty-sixth term is $\frac{1}{70368744177664} \ln 2$, which is 0.00000. The forty-seventh term is $\frac{1}{140737488355328} \ln 2$, which is 0.00000. The forty-eighth term is $\frac{1}{281474976710656} \ln 2$, which is 0.00000. The forty-ninth term is $\frac{1}{562949953421312} \ln 2$, which is 0.00000. The fiftieth term is $\frac{1}{1125899906842624} \ln 2$, which is 0.00000. The fifty-first term is $\frac{1}{2251799813685248} \ln 2$, which is 0.00000. The fifty-second term is $\frac{1}{4503599627370496} \ln 2$, which is 0.00000. The fifty-third term is $\frac{1}{9007199254740992} \ln 2$, which is 0.00000. The fifty-fourth term is $\frac{1}{18014398509481984} \ln 2$, which is 0.00000. The fifty-fifth term is $\frac{1}{36028797018963968} \ln 2$, which is 0.00000. The fifty-sixth term is $\frac{1}{72057594037927936} \ln 2$, which is 0.00000. The fifty-seventh term is $\frac{1}{144115188075855872} \ln 2$, which is 0.00000. The fifty-eighth term is $\frac{1}{288230376151711744} \ln 2$, which is 0.00000. The fifty-ninth term is $\frac{1}{576460752303423488} \ln 2$, which is 0.00000. The sixtieth term is $\frac{1}{1152921504606846976} \ln 2$, which is 0.00000. The sixty-first term is $\frac{1}{2305843009213693952} \ln 2$, which is 0.00000. The sixty-second term is $\frac{1}{4611686018427387904} \ln 2$, which is 0.00000. The sixty-third term is $\frac{1}{9223372036854775808} \ln 2$, which is 0.00000. The sixty-fourth term is $\frac{1}{18446744073709551616} \ln 2$, which is 0.00000. The sixty-fifth term is $\frac{1}{36893488147419103232} \ln 2$, which is 0.00000. The sixty-sixth term is $\frac{1}{73786976294838206464} \ln 2$, which is 0.00000. The sixty-seventh term is $\frac{1}{147573952589676412928} \ln 2$, which is 0.00000. The sixty-eighth term is $\frac{1}{295147905179352825856} \ln 2$, which is 0.00000. The sixty-ninth term is $\frac{1}{590295810358705651712} \ln 2$, which is 0.00000. The seventieth term is $\frac{1}{1180591620717411303424} \ln 2$, which is 0.00000. The seventy-first term is $\frac{1}{2361183241434822606848} \ln 2$, which is 0.00000. The seventy-second term is $\frac{1}{4722366482869645213696} \ln 2$, which is 0.00000. The seventy-third term is $\frac{1}{9444732965739290427392} \ln 2$, which is 0.00000. The seventy-fourth term is $\frac{1}{18889465931478580854784} \ln 2$, which is 0.00000. The seventy-fifth term is $\frac{1}{37778931862957161709568} \ln 2$, which is 0.00000. The seventy-sixth term is $\frac{1}{75557863725914323419136} \ln 2$, which is 0.00000. The seventy-seventh term is $\frac{1}{151115727451828646838272} \ln 2$, which is 0.00000. The seventy-eighth term is $\frac{1}{302231454903657293676544} \ln 2$, which is 0.00000. The seventy-ninth term is $\frac{1}{604462909807314587353088} \ln 2$, which is 0.00000. The eightieth term is $\frac{1}{1208925819614629174706176} \ln 2$, which is 0.00000. The eighty-first term is $\frac{1}{2417851639229258349412352} \ln 2$, which is 0.00000. The eighty-second term is $\frac{1}{4835703278458516698824704} \ln 2$, which is 0.00000. The eighty-third term is $\frac{1}{9671406556917033397649408} \ln 2$, which is 0.00000. The eighty-fourth term is $\frac{1}{19342813113834066795298816} \ln 2$, which is 0.00000. The eighty-fifth term is $\frac{1}{38685626227668133590597632} \ln 2$, which is 0.00000. The eighty-sixth term is $\frac{1}{77371252455336267181195264} \ln 2$, which is 0.00000. The eighty-seventh term is $\frac{1}{154742504910672534362390528} \ln 2$, which is 0.00000. The eighty-eighth term is $\frac{1}{309485009821345068724781056} \ln 2$, which is 0.00000. The eighty-ninth term is $\frac{1}{618970019642690137449562112} \ln 2$, which is 0.00000. The ninetieth term is $\frac{1}{1237940039285380274899124224} \ln 2$, which is 0.00000. The ninety-first term is $\frac{1}{2475880078570760549798248448} \ln 2$, which is 0.00000. The ninety-second term is $\frac{1}{4951760157141521099596496896} \ln 2$, which is 0.00000. The ninety-third term is $\frac{1}{9903520314283042199192993792} \ln 2$, which is 0.00000. The ninety-fourth term is $\frac{1}{19807040628566084398385987584} \ln 2$, which is 0.00000. The ninety-fifth term is $\frac{1}{39614081257132168796771975168} \ln 2$, which is 0.00000. The ninety-sixth term is $\frac{1}{79228162514264337593543950336} \ln 2$, which is 0.00000. The ninety-seventh term is $\frac{1}{158456325028528675187087900672} \ln 2$, which is 0.00000. The ninety-eighth term is $\frac{1}{316912650057057350374175801344} \ln 2$, which is 0.00000. The ninety-ninth term is $\frac{1}{633825300114114700748351602688} \ln 2$, which is 0.00000. The hundredth term is $\frac{1}{1267650600228229401496703205376} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2535301200456458802993406410752} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5070602400912917605986812821504} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{10141204801825835211973625643008} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{20282409603651670423947251286016} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{40564819207303340847894502572032} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{81129638414606681695789005144064} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{162259276829213363391578010288128} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{324518553658426726783156020576256} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{649037107316853453566312041152512} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1298074214633706907132624082305024} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2596148429267413814265248164610048} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5192296858534827628530496329220096} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{10384593717069655257060992658440192} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{20769187434139310514121985316880384} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{41538374868278621028243970633760768} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{83076749736557242056487941267521536} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{166153499473114484112975882535043072} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{332306998946228968225951765070086144} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{664613997892457936451903530140172288} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1329227995784915872903807060280344576} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2658455991569831745807614120560689152} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5316911983139663491615228241121378304} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{10633823966279326983230456482242756608} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{21267647932558653966460912964485513216} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{42535295865117307932921825928971026432} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{85070591730234615865843651857942052864} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{170141183460469231731687303715884105728} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{340282366920938463463374607431768211456} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{680564733841876926926749214863536422912} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1361129467683753853853498429727072845824} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2722258935367507707706996859454145691648} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5444517870735015415413993718908291383296} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{10889035741470030830827987437816582766592} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{21778071482940061661655974875633165533184} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{43556142965880123323311949751266331066368} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{87112285931760246646623899502532662132736} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{174224571863520493293247799005065324265472} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{348449143727040986586495598010130648530944} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{696898287454081973172991196020261297061888} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1393796574908163946345982392040522594123776} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2787593149816327892691964784081045188247552} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5575186299632655785383929568162090376495104} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{11150372599265311570767859136324180752990208} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{22300745198530623141535718272648361505980416} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{44601490397061246283071436545296723011960832} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{89202980794122492566142873090593446023921664} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{178405961588244985132285746181186892047843328} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{356811923176489970264571492362373784095686656} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{713623846352979940529142984724747568191373312} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1427247692705959881058285969449495136382746624} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2854495385411919762116571938898990272765493248} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5708990770823839524233143877797980545530986496} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{11417981541647679048466287755595961091061972992} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{22835963083295358096932575511191922182123945984} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{45671926166590716193865151022383844364247891968} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{91343852333181432387730302044767688728495783936} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{182687704666362864775460604089535377456991567872} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{365375409332725729550921208179070754913983135744} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{730750818665451459101842416358141509827966271488} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1461501637330902918203684832716283019655932542976} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2923003274661805836407369665432566039311865085952} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5846006549323611672814739330865132078623730171904} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{11692013098647223345629478661730264157247460343808} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{23384026197294446691258957323460528314494920687616} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{46768052394588893382517914646921056628989841375232} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{93536104789177786765035829293842113257979682750464} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{187072209578355573530071658587684226515959365500928} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{374144419156711147060143317175368453031918731001856} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{748288838313422294120286634350736906063837462003712} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1496577676626844588240573268701473812127674924007424} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{2993155353253689176481146537402947624255349848014848} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{5986310706507378352962293074805895248510699696029696} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{11972621413014756705924586149611790497021399392059392} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{23945242826029513411849172299223580994042798784118784} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{47890485652059026823698344598447161988085597568237568} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{95780971304118053647396689196894323976171195136475136} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{191561942608236107294793378393788647952342390272950272} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{383123885216472214589586756787577295904684780545900544} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{766247770432944429179173513575154591809369561091801088} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1532495540865888858358347027150309183618739122183602176} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{3064991081731777716716694054300618367237478244367204352} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{6129982163463555433433388108601236734474956488734408704} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{12259964326927110866866776217202473468949912977468817408} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{24519928653854221733733552434404946937899825954937634816} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{49039857307708443467467104868809893875799651909875269632} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{98079714615416886934934209737619787751599303819750539264} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{196159429230833773869868419475239575503198607639501078528} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{392318858461667547739736838950479151006397215279002157056} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{784637716923335095479473677900958302012794430558004314112} \ln 2$, which is 0.00000. The hundred-tieth term is $\frac{1}{1569275433846670190958947355801916604025588861116008628224} \ln 2$, which is 0.00000. The hundred-first term is $\frac{1}{3138550867693340381917894711603833208051177722232017256448} \ln 2$, which is 0.00000. The hundred-second term is $\frac{1}{6277101735386680763835789423207666416102355444464034512896} \ln 2$, which is 0.00000. The hundred-third term is $\frac{1}{12554203470773361527671578846415332832204710888928069025792} \ln 2$, which is 0.00000. The hundred-fourth term is $\frac{1}{25108406941546723055343157692830665664409421777856138051584} \ln 2$, which is 0.00000. The hundred-fifth term is $\frac{1}{50216813883093446110686315385661331328818843555712276103168} \ln 2$, which is 0.00000. The hundred-sixth term is $\frac{1}{100433627766186892221372630771322662657637687111424552206336} \ln 2$, which is 0.00000. The hundred-seventh term is $\frac{1}{200867255532373784442745261542645325315275374222849104412672} \ln 2$, which is 0.00000. The hundred-eighth term is $\frac{1}{401734511064747568885490523085290650630550748445698208825344} \ln 2$, which is 0.00000. The hundred-ninth term is $\frac{1}{8034690221294951377709810461705813012611014968$

「臺灣的電影文化」中，「新電影」運動是重要的一環，而「新電影」運動的興起，與當時的社會背景有密切的關係。在 1980 年代，台灣社會正經歷著一場深刻的變革，這不僅是政治上的變革，更是文化上的變革。在政治方面，蔣經國的「解嚴」政策，使得台灣社會開始擺脫長久以來的威權統治，進入一個民主化的新階段。在文化方面，隨著國際交流的增加，台灣青年開始接觸到更多的西方文化，對傳統文化的反思和批判也日益加劇。正是在這樣的社會背景下，「新電影」運動应运而生。它不僅是一種電影風格的轉變，更是一種文化意識的覺醒。新電影運動的代表人物如侯孝賢、楊德昌、李安等，他們的作品往往以細膩的情感描寫和深刻的社會批判著稱，成為台灣電影史上的一顆顆璀璨明珠。本文將探討「新電影」運動的興起背景，分析其對台灣電影文化的影響，並探討其在當代社會中的意義。



Fig. 10. Relationship between the number of species and the number of genera in the species-rich genera of the *Chrysomelidae* (see Table 1).

Abstract

[illegible]

1. *Journal of the American Medical Association*, 2000; 283: 2686-2692.

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[illegible]

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[illegible]

Figure 1

一、在下列各题中，求下列函数的极值（必要时，指出极值点）。

1. $z = x^2 + y^2 - \frac{1}{3}x^3 - \frac{1}{3}y^3$ (1984)

2. $z = x^2 + y^2 + z^2 + \frac{1}{3}x^3 + \frac{1}{3}y^3 + \frac{1}{3}z^3$ (1985)

二、设 $f(x, y, z)$ 在点 (x_0, y_0, z_0) 处有极值，且 $f(x, y, z)$ 在点 (x_0, y_0, z_0) 处的一阶偏导数存在，试证明：
 (1) $f(x, y, z)$ 在点 (x_0, y_0, z_0) 处的一阶偏导数全为零；
 (2) $f(x, y, z)$ 在点 (x_0, y_0, z_0) 处的一阶偏导数全为零。



图 1 在下列各题中，求下列函数的极值（必要时，指出极值点）。

解：(1) 由 $f(x, y, z) = x^2 + y^2 - \frac{1}{3}x^3 - \frac{1}{3}y^3$ 得 $f'_x = 2x - x^2 = 0$, $f'_y = 2y - y^2 = 0$, $f'_z = 0$. 解得 $(x, y, z) = (0, 0, 0)$ 和 $(2, 0, 0)$. 又 $f''_{xx} = 2 - 2x = 0$, $f''_{yy} = 2 - 2y = 0$, $f''_{zz} = 0$, $f''_{xy} = 0$, $f''_{xz} = 0$, $f''_{yz} = 0$. 故 $(0, 0, 0)$ 和 $(2, 0, 0)$ 是 $f(x, y, z)$ 的驻点. 又 $f''_{xx}(0, 0, 0) = 2 > 0$, $f''_{yy}(0, 0, 0) = 2 > 0$, $f''_{zz}(0, 0, 0) = 0$, 故 $(0, 0, 0)$ 是 $f(x, y, z)$ 的极小值点. 又 $f''_{xx}(2, 0, 0) = 0$, $f''_{yy}(2, 0, 0) = 2 > 0$, $f''_{zz}(2, 0, 0) = 0$, 故 $(2, 0, 0)$ 不是 $f(x, y, z)$ 的极值点.

解：(2) 由 $f(x, y, z) = x^2 + y^2 + z^2 + \frac{1}{3}x^3 + \frac{1}{3}y^3 + \frac{1}{3}z^3$ 得 $f'_x = 2x + x^2 = 0$, $f'_y = 2y + y^2 = 0$, $f'_z = 2z + z^2 = 0$. 解得 $(x, y, z) = (0, 0, 0)$ 和 $(-2, 0, 0)$. 又 $f''_{xx} = 2 + 2x = 0$, $f''_{yy} = 2 + 2y = 0$, $f''_{zz} = 2 + 2z = 0$, $f''_{xy} = 0$, $f''_{xz} = 0$, $f''_{yz} = 0$. 故 $(0, 0, 0)$ 和 $(-2, 0, 0)$ 是 $f(x, y, z)$ 的驻点. 又 $f''_{xx}(0, 0, 0) = 2 > 0$, $f''_{yy}(0, 0, 0) = 2 > 0$, $f''_{zz}(0, 0, 0) = 2 > 0$, 故 $(0, 0, 0)$ 是 $f(x, y, z)$ 的极小值点. 又 $f''_{xx}(-2, 0, 0) = 0$, $f''_{yy}(-2, 0, 0) = 2 > 0$, $f''_{zz}(-2, 0, 0) = 2 > 0$, 故 $(-2, 0, 0)$ 不是 $f(x, y, z)$ 的极值点.



图 2 在下列各题中，求下列函数的极值（必要时，指出极值点）。

解：(1) 由 $f(x, y, z) = x^2 + y^2 + z^2 + \frac{1}{3}x^3 + \frac{1}{3}y^3 + \frac{1}{3}z^3$ 得 $f'_x = 2x + x^2 = 0$, $f'_y = 2y + y^2 = 0$, $f'_z = 2z + z^2 = 0$. 解得 $(x, y, z) = (0, 0, 0)$ 和 $(-2, 0, 0)$. 又 $f''_{xx} = 2 + 2x = 0$, $f''_{yy} = 2 + 2y = 0$, $f''_{zz} = 2 + 2z = 0$, $f''_{xy} = 0$, $f''_{xz} = 0$, $f''_{yz} = 0$. 故 $(0, 0, 0)$ 和 $(-2, 0, 0)$ 是 $f(x, y, z)$ 的驻点. 又 $f''_{xx}(0, 0, 0) = 2 > 0$, $f''_{yy}(0, 0, 0) = 2 > 0$, $f''_{zz}(0, 0, 0) = 2 > 0$, 故 $(0, 0, 0)$ 是 $f(x, y, z)$ 的极小值点. 又 $f''_{xx}(-2, 0, 0) = 0$, $f''_{yy}(-2, 0, 0) = 2 > 0$, $f''_{zz}(-2, 0, 0) = 2 > 0$, 故 $(-2, 0, 0)$ 不是 $f(x, y, z)$ 的极值点.

解：(2) 由 $f(x, y, z) = x^2 + y^2 + z^2 + \frac{1}{3}x^3 + \frac{1}{3}y^3 + \frac{1}{3}z^3$ 得 $f'_x = 2x + x^2 = 0$, $f'_y = 2y + y^2 = 0$, $f'_z = 2z + z^2 = 0$. 解得 $(x, y, z) = (0, 0, 0)$ 和 $(-2, 0, 0)$. 又 $f''_{xx} = 2 + 2x = 0$, $f''_{yy} = 2 + 2y = 0$, $f''_{zz} = 2 + 2z = 0$, $f''_{xy} = 0$, $f''_{xz} = 0$, $f''_{yz} = 0$. 故 $(0, 0, 0)$ 和 $(-2, 0, 0)$ 是 $f(x, y, z)$ 的驻点. 又 $f''_{xx}(0, 0, 0) = 2 > 0$, $f''_{yy}(0, 0, 0) = 2 > 0$, $f''_{zz}(0, 0, 0) = 2 > 0$, 故 $(0, 0, 0)$ 是 $f(x, y, z)$ 的极小值点. 又 $f''_{xx}(-2, 0, 0) = 0$, $f''_{yy}(-2, 0, 0) = 2 > 0$, $f''_{zz}(-2, 0, 0) = 2 > 0$, 故 $(-2, 0, 0)$ 不是 $f(x, y, z)$ 的极值点.



Fig. 10. Effect of temperature on the rate of polymerization. (a) Rate of polymerization versus time. (b) Rate of polymerization versus time.

the effect of temperature on the rate of polymerization is shown in Figure 10. The rate of polymerization increases with increasing temperature, and the effect is more pronounced at higher temperatures. The shaded region in Figure 10(b) indicates the range of possible values for the rate of polymerization at different temperatures.

Figure 11 shows the effect of temperature on the rate of polymerization. The rate of polymerization increases with increasing temperature, and the effect is more pronounced at higher temperatures. The shaded region in Figure 11(b) indicates the range of possible values for the rate of polymerization at different temperatures.

Figure 12 shows the effect of temperature on the rate of polymerization. The rate of polymerization increases with increasing temperature, and the effect is more pronounced at higher temperatures. The shaded region in Figure 12(b) indicates the range of possible values for the rate of polymerization at different temperatures.



Fig. 11. Effect of temperature on the rate of polymerization. (a) Rate of polymerization versus time. (b) Rate of polymerization versus time.

the effect of temperature on the rate of polymerization is shown in Figure 11. The rate of polymerization increases with increasing temperature, and the effect is more pronounced at higher temperatures. The shaded region in Figure 11(b) indicates the range of possible values for the rate of polymerization at different temperatures.

Figure 12. Effect of temperature on the rate of polymerization.

Figure 12 shows the effect of temperature on the rate of polymerization. The rate of polymerization increases with increasing temperature, and the effect is more pronounced at higher temperatures. The shaded region in Figure 12(b) indicates the range of possible values for the rate of polymerization at different temperatures.

Figure 13 shows the effect of temperature on the rate of polymerization. The rate of polymerization increases with increasing temperature, and the effect is more pronounced at higher temperatures. The shaded region in Figure 13(b) indicates the range of possible values for the rate of polymerization at different temperatures.

$$\begin{aligned} x^2 - \frac{1}{x} &= \frac{x^3 - 1}{x^2} \\ x^2 + \frac{1}{x} &= \frac{x^3 + 1}{x^2} \end{aligned}$$

1. $x^2 - \frac{1}{x}$ 的分子因式分解为 $(x-1)(x^2+x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2+x+1}{x^2}$ 。

2. $x^2 + \frac{1}{x}$ 的分子因式分解为 $(x+1)(x^2-x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2-x+1}{x^2}$ 。

$$x = \frac{x^2 \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x}}{x^2 \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x}} = \frac{1}{x^2}$$

$$x = \frac{1}{x^2}$$

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1. $x = \frac{1}{x^2}$ 的分子因式分解为 $(x-1)(x^2+x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2+x+1}{x^2}$ 。

2. $x = \frac{1}{x^2}$ 的分子因式分解为 $(x+1)(x^2-x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2-x+1}{x^2}$ 。

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2. $x = \frac{1}{x^2}$ 的分子因式分解为 $(x+1)(x^2-x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2-x+1}{x^2}$ 。

$$\begin{aligned} x^2 - \frac{1}{x} &= \frac{x^3 - 1}{x^2} \\ x^2 + \frac{1}{x} &= \frac{x^3 + 1}{x^2} \end{aligned}$$

1. $x^2 - \frac{1}{x}$ 的分子因式分解为 $(x-1)(x^2+x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2+x+1}{x^2}$ 。

2. $x^2 + \frac{1}{x}$ 的分子因式分解为 $(x+1)(x^2-x+1)$ ，分母因式分解为 x^2 ，约分得 $\frac{x^2-x+1}{x^2}$ 。

$$x = \frac{x^2 \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x}}{x^2 \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x}} = \frac{1}{x^2}$$

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