1982 FI1.2

設 $b = 258$ 的所有位值之和，求 b 的值。

Let b = the sum of the digits of the number 258. Find the value of b.

1982 FI1.3

若 $c = 15^2$，求 c 的值。

If $c = 15^2$, find the value of c.

1982 FI1.4

已知 $3d = 225$，求 d 的值。

Given that $3d = 225$, find the value of d.

1982 FG10.1, 1992 HI17

若 $N = 2^{12} \times 5^8$，N 是一個多少位的數字？

How many digits are there in the number N if $N = 2^{12} \times 5^8$?

1983 FI3.1

若 $a = 1.8 \times 5.0865 + 1 - 0.0865 \times 1.8$，求 a 的值。

If $a = 1.8 \times 5.0865 + 1 - 0.0865 \times 1.8$, find the value of a.

1984 FG9.1

若 $x = \left(1 - \dfrac{1}{2}\right)\left(1 - \dfrac{1}{3}\right)\left(1 - \dfrac{1}{4}\right)\cdots\left(1 - \dfrac{1}{100}\right)$，試以最簡單的分數表 x。

If $x = \left(1 - \dfrac{1}{2}\right)\left(1 - \dfrac{1}{3}\right)\left(1 - \dfrac{1}{4}\right)\cdots\left(1 - \dfrac{1}{100}\right)$, find x in the simplest fractional form.

1985 FSG.3

若 $K = \left(1 - \dfrac{1}{2}\right)\left(1 - \dfrac{1}{3}\right)\left(1 - \dfrac{1}{4}\right)\cdots\left(1 - \dfrac{1}{50}\right)$，試以最簡單之分數表 K。

If $K = \left(1 - \dfrac{1}{2}\right)\left(1 - \dfrac{1}{3}\right)\left(1 - \dfrac{1}{4}\right)\cdots\left(1 - \dfrac{1}{50}\right)$, find K in the simplest fractional form.

1995 FG6.2 2006 FI4.1

若 $c = \left(1 + \dfrac{1}{2} + \dfrac{1}{3}\right)\left(\dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{4}\right) - \left(1 + \dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{4}\right)\left(\dfrac{1}{2} + \dfrac{1}{3}\right)$，求 c 的值。

Find the value of c, if $c = \left(1 + \dfrac{1}{2} + \dfrac{1}{3}\right)\left(\dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{4}\right) - \left(1 + \dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{4}\right)\left(\dfrac{1}{2} + \dfrac{1}{3}\right)$.

1995 FG6.3

求 d 的值，若 $d = \left(1 + \dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1994}\right)\left(\dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1995}\right)$
$\qquad - \left(1 + \dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1995}\right)\left(\dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1994}\right)$。

Find the value of d, if $d = \left(1 + \dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1994}\right)\left(\dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1995}\right)$
$\qquad - \left(1 + \dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1995}\right)\left(\dfrac{1}{2} + \dfrac{1}{3} + \cdots + \dfrac{1}{1994}\right)$

1995 FG7.4

求 d 的值，若 $d = \sqrt{111111 - 222}$。

Find the value of d, where $d = \sqrt{111111 - 222}$.

1996 FG7.2

六位數 111222 是兩個連續正整數 b 和 $b + 1$ 之積，求 b 的值。

A six-digit figure 111222 is the product of two consecutive positive integers b and $b + 1$, find the value of b.

1996 FG9.3

若 $c = 1996 \times 19971997 - 1995 \times 19961996$，求 c 的值。

If $c = 1996 \times 19971997 - 1995 \times 19961996$, find the value of c.

1997 FI3.4

若 $(1 + 2 + 3 + 4)^2 = 1^2 + 2^2 + 3^2 + 4^2 + S$，求 S 的值。

If $(1 + 2 + 3 + 4)^2 = 1^2 + 2^2 + 3^2 + 4^2 + S$, find the value of S.

1997 FG2.2

若 $(0.0025 \times 40)^b = \dfrac{1}{100}$，求 b 的值。

If $(0.0025 \times 40)^b = \dfrac{1}{100}$, find the value of b.

1997 FG3.4

d、e 及 f 為三個小於 10 之質數且滿足兩個條件 $d + e = f$ 及 $d < e$。求 d 的值。

Three prime numbers d, e and f which are all less than 10, satisfy the two conditions $d + e = f$ and $d < e$. Find the value of d.

1998 FI3.3

若 $27^2 - c^2 = 200$ 及 $c > 0$，求 c 的值。

If $27^2 - c^2 = 200$ and $c > 0$, find the value of c.

1998 FG2.2

若 b = 1999×19981998 – 1998×19991999 + 1，求 b 的值。

If b = 1999×19981998 – 1998×19991999 + 1, find the value of b .

2000 FI2.4

如果 111111111111 – 222222 = $(1 + S)^2$，求正數 S 的值。

If 111111111111 – 222222 = $(1 + S)^2$ and $S > 0$, find the value of S .

2000 FI5.1

如果 $\left(\dfrac{1\times2\times4+2\times4\times8+3\times6\times12+\cdots+1999\times3998\times7996}{1^3+2^3+3^3+\cdots+1999^3}\right)^{\frac{1}{3}}=P$，求 P 的值。

If $\left(\dfrac{1\times2\times4+2\times4\times8+3\times6\times12+\cdots+1999\times3998\times7996}{1^3+2^3+3^3+\cdots+1999^3}\right)^{\frac{1}{3}}=P$,

find the value of P .

2001 FG2.3

已知 111111222222 = $c\times(c + 1)$，求 c 的值。

Given that 111111222222 = $c\times(c + 1)$, find the value of c .

2002 FG3.1

若 $\dfrac{2002^3+4\times2002^2+6006}{2002^2+2002}=a$，求 a 的值。

If $\dfrac{2002^3+4\times2002^2+6006}{2002^2+2002}=a$, find the value of a .

2005 FI2.4

已知 $P_1, P_2, \ldots, P_d$ 是 d 個連續質數。

若 $P_1 + P_2 + \ldots + P_{d-2} = P_{d-1} + P_d = 36$，求 d 的值。

Given that $P_1, P_2, \ldots, P_d$ are d consecutive prime numbers.

If $P_1 + P_2 + \ldots + P_{d-2} = P_{d-1} + P_d = 36$, find the value of d .

2005 FG2.2

設 $b = 89 + 899 + 8999 + 89999 + 899999$，求 b 的值。

Let $b = 89 + 899 + 8999 + 89999 + 899999$, find the value of b .

2006 HI4

設 $A = \dfrac{2006}{20052005^2 - 20052004\times20052006}$ ，求 A 的值。

Let $A = \dfrac{2006}{20052005^2 - 20052004\times20052006}$, find the value of A .

2006 HI4

設 $A = \dfrac{2006}{20052005^2 - 20052004\times20052006}$ ，求 A 的值。

Let $A = \dfrac{2006}{20052005^2 - 20052004\times20052006}$, find the value of A .

2007 FI2.1

設 $n = 1 + 3 + 5 + \ldots +31$ 及 $m = 2 + 4 + 6 \ldots + 32$。若 $a = m - n$，求 a 的值。

Let $n = 1 + 3 + 5 +...+ 31$ and $m = 2 + 4 + 6 ...+ 32$.

If $a = m - n$, find the value of a .

2007 FG2.3

設 $y = \dfrac{146410000 - 12100}{12099}$ ，求 y 的值。

Let $y = \dfrac{146410000 - 12100}{12099}$, find the value of y .

2008 FG1.3

已知 x、y 及 z 為正整數及分數 $\dfrac{151}{44}$ 可寫成 $3+\cfrac{1}{x+\cfrac{1}{y+\cfrac{1}{z}}}$ 的形式。

求 $x + y + z$ 的值。

Given that x, y and z are positive integers and the fraction $\dfrac{151}{44}$ can be written in

the form of $3+\cfrac{1}{x+\cfrac{1}{y+\cfrac{1}{z}}}$. Find the value of $x + y + z$.

2010 FIS.1

已知 $a = \sqrt{(19.19)^2 + (39.19)^2 - (38.38)(39.19)}$。求 a 的值。

Given that $a = \sqrt{(19.19)^2 + (39.19)^2 - (38.38)(39.19)}$. Find the value of m .

2011 FG1.2

若 $b = 1 - \cfrac{1}{1 - \cfrac{1}{1 - \cfrac{1}{1 - \cfrac{1}{-\frac{1}{2}}}}}$ ，求 b 的值。

If $b = 1 - \cfrac{1}{1 - \cfrac{1}{1 - \cfrac{1}{1 - \cfrac{1}{-\frac{1}{2}}}}}$, find the value of b .

2011 FG4.1

若 $P = 2\sqrt[4]{2007 \cdot 2009 \cdot 2011 \cdot 2013 + 10 \cdot 2010 \cdot 2010 - 9} - 4000$ ，求 P 的值。

If $P = 2\sqrt[4]{2007 \cdot 2009 \cdot 2011 \cdot 2013 + 10 \cdot 2010 \cdot 2010 - 9} - 4000$,

find the value of P .

2012 HI4

$2^{20} \times 25^{12}$ 是一個多少個位的數？

Find the number of places of the number $2^{20} \times 25^{12}$.

2012 HG3

求 $\sqrt{2^2 + 2^{1008} + 2^{2012}}$ 的值。(答案可以指數表示。)

Evaluate $\sqrt{2^2 + 2^{1008} + 2^{2012}}$. (Answer can be expressed in index form.)

2013 FG4.2

若 $\dfrac{1}{4} + 4\left(\dfrac{1}{2013} + \dfrac{1}{x}\right) = \dfrac{7}{4}$ ， 求 $1872 + 48 \times \left(\dfrac{2013x}{x + 2013}\right)$ 的值。

If $\dfrac{1}{4} + 4\left(\dfrac{1}{2013} + \dfrac{1}{x}\right) = \dfrac{7}{4}$, find the value of $1872 + 48 \times \left(\dfrac{2013x}{x + 2013}\right)$.

2014 FI4.4

求 $\delta = \dfrac{3}{2} + \dfrac{5}{4} + \dfrac{9}{8} + \dfrac{17}{16} + \dfrac{33}{32} + \dfrac{65}{64} - 7\dfrac{1}{2}$ 的值。

Determine the value of $\delta = \dfrac{3}{2} + \dfrac{5}{4} + \dfrac{9}{8} + \dfrac{17}{16} + \dfrac{33}{32} + \dfrac{65}{64} - 7\dfrac{1}{2}$.
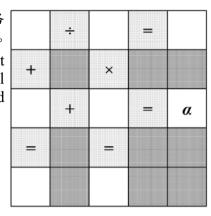
2014 FG2.1

若在 $\dfrac{1}{2} + \dfrac{1}{4} + \dfrac{1}{6} + \dfrac{1}{8} + \dfrac{1}{10} + \dfrac{1}{12}$ 中刪去若干項後剩 1 ，求刪去各項的乘積。

By removing certain terms from the sum, $\dfrac{1}{2} + \dfrac{1}{4} + \dfrac{1}{6} + \dfrac{1}{8} + \dfrac{1}{10} + \dfrac{1}{12}$, we can get 1 .

What is the product of the removed term(s)?

2014 FG3.4

把不同的非零個位數填進下表白色的正方格內，使所有橫、直的等式均成立。求 α 的值。
Fill the white squares in the figure with distinct non-zero digits so that the arithmetical expressions, read both horizontally and vertically, are correct. What is the value of α ?

2015 HI2

已知 $\left(10^{2015}\right)^{-10^2} = 0.\underbrace{000\cdots01}_{n個0}$ ，求 n 的值。

Given that $\left(10^{2015}\right)^{-10^2} = 0.\underbrace{000\cdots01}_{n \text{ times}}$. Find the value of n .

2015 FG1.1

化簡 $\left(\dfrac{1\times3\times9 + 2\times6\times18 + \cdots + n\times3n\times9n}{1\times5\times25 + 2\times10\times50 + \cdots + n\times5n\times25n}\right)^{\frac{1}{3}}$ 。

Simplify $\left(\dfrac{1\times3\times9 + 2\times6\times18 + \cdots + n\times3n\times9n}{1\times5\times25 + 2\times10\times50 + \cdots + n\times5n\times25n}\right)^{\frac{1}{3}}$.

2016 HI5

63 個連續整數的和是 2016，求緊接該 63 個連續整數後的 63 個連續整數的和。

The sum of 63 consecutive integers is 2016 , find the sum of the next 63 consecutive integers.

2016 HG1

最初甲瓶裝有 1 公升酒精，乙瓶是空的。

第 1 次將甲瓶全部的酒精倒入乙瓶中，第 2 次將乙瓶酒精的 $\frac{1}{2}$ 倒回甲瓶，

第 3 次將甲瓶酒精的 $\frac{1}{3}$ 倒回乙瓶，第 4 次將乙瓶酒精的 $\frac{1}{4}$ 倒回甲瓶，……。

第 2016 次後，甲瓶還有多少公升酒精？

At the beginning, there was 1 litre of alcohol in bottle *A* and bottle *B* is an empty

bottle. First, pour all alcohol from bottle *A* to bottle *B*; second, pour $\frac{1}{2}$ of the

alcohol from bottle *B* back to bottle *A*; third, pour $\frac{1}{3}$ of the alcohol from bottle

A to bottle *B*; fourth, pour $\frac{1}{4}$ of the alcohol from bottle *B* back to bottle *A*, $\cdots$.

After the 2016th pouring, how much alcohol was left in bottle *A* ?

2016 HG10

求 $\dfrac{1^4 + 2015^4 + 2016^4}{1^2 + 2015^2 + 2016^2}$ 的值。

Find the value of $\dfrac{1^4 + 2015^4 + 2016^4}{1^2 + 2015^2 + 2016^2}$.

2017 HI4

設 *B* 及 *C* 為正整數，求 *C* 的最小值使得 $B^2 = C + 134$。

Let *B* and *C* be positive integers .

Find the least value of *C* satisfying $B^2 = C + 134$.

2019 FI1.3

若 $Y = 2^{3(7-1)}$ 並且 *C* 是 *Y* 中每個數字之和，求 *C* 的值。

If $Y = 2^{3(7-1)}$ and *C* is the sum of the digits of *Y* , determine the value of *C* .

2019FG4.4

若 $f(x) = \left(x + \dfrac{1}{2000}\right) \times \left(x + \dfrac{1}{2001}\right) \times \cdots \times \left(x + \dfrac{1}{2019}\right)$ 以及 $\delta = f(1) - 1$，求 δ 的值。

If $f(x) = \left(x + \dfrac{1}{2000}\right) \times \left(x + \dfrac{1}{2001}\right) \times \cdots \times \left(x + \dfrac{1}{2019}\right)$ and $\delta = f(1) - 1$,

determine the value of δ .

2021 P1Q8

求 $\dfrac{1001 \times 1002}{\dfrac{1}{1 + \frac{1}{1002}} + \dfrac{2}{2 + \frac{2}{1002}} + \dfrac{3}{3 + \frac{3}{1002}} + \cdots + \dfrac{1001}{1001 + \frac{1001}{1002}}}$ 的值。

Find the value of $\dfrac{1001 \times 1002}{\dfrac{1}{1 + \frac{1}{1002}} + \dfrac{2}{2 + \frac{2}{1002}} + \dfrac{3}{3 + \frac{3}{1002}} + \cdots + \dfrac{1001}{1001 + \frac{1001}{1002}}}$.

2022 P2Q1

設 $\dfrac{A}{2022} = \dfrac{1}{1 + 1 \times 2 \times 3 \times \cdots \times 2022} + \dfrac{1}{1 + \dfrac{1}{1 \times 2 \times 3 \times \cdots \times 2022}}$。求 *A* 的值。

Let $\dfrac{A}{2022} = \dfrac{1}{1 + 1 \times 2 \times 3 \times \cdots \times 2022} + \dfrac{1}{1 + \dfrac{1}{1 \times 2 \times 3 \times \cdots \times 2022}}$. Find the value of *A* .

Answers

1982 FI1.2 15	1982 FI1.3 225	1982 FI1.4 75	1982FG10.1 1992HI17 10	1983 FI3.1 10
1984 FG9.1 $\dfrac{1}{100}$	1985 FSG.3 $\dfrac{1}{50}$	1995FG6.2 2006FI4.1 $\dfrac{1}{4}$	1995 FG6.3 $\dfrac{1}{1995}$	1995 FG7.4 333
1996 FG7.2 333	1996 FG9.3 39923992	1997FI3.4 70	1997 FG2.2 2	1997 FG3.4 2
1998 FI3.3 23	1998 FG2.2 1	2000 FI2.4 333332	2000 FI5.1 2	2001 FG2.3 333333
2002 FG3.1 2005	2005 FI2.4 6	2005 FG2.2 999985	2006 HI4 2006	2007 FI2.1 16
2007 FG2.3 12100	2008 FG1.3 11	2010 FIS.1 20	2011 FG1.2 3	2011 FG4.1 20
2012 HI4 23	2012 HG3 $2 + 2^{1006}$	2013 FG4.2 2000	2014 FI4.4 $-\dfrac{33}{64}$	2014 FG2.1 $\dfrac{1}{80}$
2014 FG3.4 5	2015 HI2 201499	2015 FG1.1 $\dfrac{3}{5}$	2016 HI5 5985	2016 HG1 $\dfrac{1}{2}$
2016 HG10 4062241	2017 HI4 10	2019 FI1.3 15	2019 FG4.4 0.01	2021 P1Q8 1003
2022 P2Q1 2022				