1992 HG2

a、b、c 為非零實數，且 $\dfrac{a+b-c}{c} = \dfrac{a-b+c}{b} = \dfrac{-a+b+c}{a}$ 。

若 $x = \dfrac{(a+b)(b+c)(c+a)}{abc}$ 及 $x < 0$，求 x 的值。

a, b, c are non-zero real numbers such that $\dfrac{a+b-c}{c} = \dfrac{a-b+c}{b} = \dfrac{-a+b+c}{a}$.

If $x = \dfrac{(a+b)(b+c)(c+a)}{abc}$ and $x < 0$, find the value of x.

1996 HI10

因式分解 $x^2(y-z) + y^2(z-x) + z^2(x-y)$。

Factorize $x^2(y-z) + y^2(z-x) + z^2(x-y)$.

1996 FG7.3

若 p, q, r 是非零實數，$p^2 + q^2 + r^2 = 1$，

$p\left(\dfrac{1}{q}+\dfrac{1}{r}\right)+q\left(\dfrac{1}{r}+\dfrac{1}{p}\right)+r\left(\dfrac{1}{p}+\dfrac{1}{q}\right)+3=0$，及 $c = p + q + r$，求 c 的最大值。

If p, q, r are non-zero real numbers;

$p^2 + q^2 + r^2 = 1$, $p\left(\dfrac{1}{q}+\dfrac{1}{r}\right)+q\left(\dfrac{1}{r}+\dfrac{1}{p}\right)+r\left(\dfrac{1}{p}+\dfrac{1}{q}\right)+3=0$ and $c = p + q + r$,

find the largest value of c.

1998 FG1.2

已知 $\dfrac{a}{2b+c} = \dfrac{b}{2c+a} = \dfrac{c}{2a+b}$ 且 $a+b+c \neq 0$。若 $q = \dfrac{2b+c}{a}$，求 q 的數值。

Given that $\dfrac{a}{2b+c} = \dfrac{b}{2c+a} = \dfrac{c}{2a+b}$ and $a+b+c \neq 0$.

If $q = \dfrac{2b+c}{a}$, find the value of q.

1998 FG3.4

已知 $x + y + z = 0$、$x^2 + y^2 + z^2 = 1$ 及 $d = 2(x^4 + y^4 + z^4)$，求 d 的數值。

Given that $x + y + z = 0$, $x^2 + y^2 + z^2 = 1$ and $d = 2(x^4 + y^4 + z^4)$, find the value of d.

1999 FI2.1

若 x、y 及 z 為正實數使得 $\dfrac{x+y-z}{z} = \dfrac{x-y+z}{y} = \dfrac{-x+y+z}{x}$，

且 $a = \dfrac{(x+y)\cdot(y+z)\cdot(z+x)}{xyz}$，求 a 之值。

If x, y and z are positive real numbers such that $\dfrac{x+y-z}{z} = \dfrac{x-y+z}{y} = \dfrac{-x+y+z}{x}$

and $a = \dfrac{(x+y)\cdot(y+z)\cdot(z+x)}{xyz}$, find the value of a.

2000 FI1.2

設 $a+b+c = 0$。已知 $\dfrac{a^2}{2a^2+bc} + \dfrac{b^2}{2b^2+ac} + \dfrac{c^2}{2c^2+ab} = 25 - 3Q$，求 Q 的值。

Let $a + b + c = 0$.

Given that $\dfrac{a^2}{2a^2+bc} + \dfrac{b^2}{2b^2+ac} + \dfrac{c^2}{2c^2+ab} = 25 - 3Q$, find the value of Q.

2001 FG1.1

已知 $(a+b+c)^2 = 3(a^2+b^2+c^2)$ 及 $a+b+c = 12$。求 a 的值。

Given that $(a+b+c)^2 = 3(a^2+b^2+c^2)$ and $a+b+c = 12$, find the value of a.

2004 HI3

若 $x + y + z = 10$，$x^2 + y^2 + z^2 = 10$ 及 $xy + yz + zx = m$，求 m 的值。

If $x + y + z = 10$, $x^2 + y^2 + z^2 = 10$ and $xy + yz + zx = m$, find the value of m.

2012 FG4.3

設 $xyzt = 1$。

若 $R = \dfrac{1}{1+x+xy+xyz} + \dfrac{1}{1+y+yz+yzt} + \dfrac{1}{1+z+zt+ztx} + \dfrac{1}{1+t+tx+txy}$，

求 R 的值。

Let $xyzt = 1$.

If $R = \dfrac{1}{1+x+xy+xyz} + \dfrac{1}{1+y+yz+yzt} + \dfrac{1}{1+z+zt+ztx} + \dfrac{1}{1+t+tx+txy}$,

find the value of R.

2014 HI2

已知 $a = 2014x + 2011$，$b = 2014x + 2013$ 及 $c = 2014x + 2015$。

求 $a^2 + b^2 + c^2 - ab - bc - ca$ 的值。

Given that $a = 2014x + 2011$, $b = 2014x + 2013$ and $c = 2014x + 2015$.

Find the value of $a^2 + b^2 + c^2 - ab - bc - ca$.

2022 P2Q7

已知 $x + y + z = 1$，$x^2 + y^2 + z^2 = 2$ 及 $x^3 + y^3 + z^2 = 3$。求 $x^4 + y^4 + z^4$ 的值。

Given that $x + y + z = 1$, $x^2 + y^2 + z^2 = 2$ and $x^3 + y^3 + z^2 = 3$.

Find the value of $x^4 + y^4 + z^4$.

Answers

1992 HG2 −1	1996 HI10 $-(x-y)(y-z)(z-x)$	1996 FG7.3 1	1998 FG1.2 3	1998 FG3.4 1
1999 FI2.1 8	2000 FI1.2 8	2001 FG1.1 4	2004 HI3 45	2012 FG4.3 1
2014 HI2 12	2022 P2Q7 $\frac{25}{4}$			