

اگر  $x > 0$  و  $x - \frac{1}{x} = \sqrt{17}$  حاصل  $x - \frac{1}{x}$  چند است؟

$$\left(x + \frac{1}{x}\right)^2 = \left(x - \frac{1}{x}\right)^2 + 4$$

$$\begin{aligned} \rightarrow \left(x + \frac{1}{x}\right)^2 &= x^2 + \frac{1}{x^2} + 2 \\ \left(x - \frac{1}{x}\right)^2 &= x^2 + \frac{1}{x^2} - 2 \end{aligned}$$

$$\left(x - \frac{1}{x}\right)^2 = (\sqrt{17})^2 = 17 \Rightarrow \left(x + \frac{1}{x}\right)^2 = 17 + 4 = 21$$

$$\Rightarrow x + \frac{1}{x} = \sqrt{21} = 4$$

$$\left(\sqrt{x - \frac{1}{x}}\right)^2 = x + \frac{1}{x} - 2 = 4 \Rightarrow \sqrt{x - \frac{1}{x}} = \sqrt{21}$$

$$\sqrt{x - \frac{1}{x}} = M \quad \begin{matrix} x^2 = r \\ m = \sqrt{r} \end{matrix}$$

فرم کلیه  $a$  و  $b$  و  $c$  سه عدد صحیح باشند (مساوی) زیر عبارت برابر است

$$(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2ac + 2bc$$

$$(a-b+c)^2 = a^2 + b^2 + c^2 - 2ab + 2ac - 2bc$$

$$(a+b-c)^2 = a^2 + b^2 + c^2 + 2ab - 2ac - 2bc$$

$$(a-b-c)^2 = a^2 + b^2 + c^2 - 2ab - 2ac + 2bc$$

$$\frac{a^2 + b^2 + c^2}{ab + bc + ca} = \frac{(a+b+c)^2 - 2ab - 2ac - 2bc}{ab + bc + ca} = \frac{a^2 + b^2 + c^2}{ab + bc + ca} = 7$$

$$\frac{1}{ab} + \frac{1}{ac} + \frac{1}{bc} = \frac{a^2 + b^2 + c^2}{abc} = 7 \Rightarrow \frac{a+b+c}{abc} = 7$$

$$\frac{1}{ab} + \frac{1}{ac} + \frac{1}{bc} = \frac{a+b+c}{abc} = 7 \Rightarrow \frac{a+b+c}{abc} = 7$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a+b)^2 = (a+b)(a+b) = (a^2 + b^2 + 2ab)(a+b) = a^3 + a^2b + ab^2 + b^3$$

$$(a-b)^2 = a^2 - 2ab + b^2 \Rightarrow (a+b)^2 = a^2 + 2ab + b^2$$

$$\begin{aligned} (x-\sqrt{x})^2 &= x^2 - 2x\sqrt{x} + (\sqrt{x})^2 \\ &= x^2 - 2x\sqrt{x} + x \\ &= x^2 - 2x\sqrt{x} + x \end{aligned}$$

$$(a+b)(a^2 - ab + b^2) = a^3 + b^3$$

$$(a+b)(a^2 - ab + b^2) = a^3 + b^3$$

$$(a-b)(a^2 + ab + b^2) = a^3 - b^3$$

$$x^2 - 1 = (x-1)(x+1) = (x-1)(x^2 + x + 1)$$

$$(x-1)(x^2 + x + 1) = x^3 - 1$$

$$(a-b)(a^2 + ab + b^2) = (a-b)(a^2 + ab + b^2 + rab - rab)$$

$$a^3 - b^3 = (a-b)((a-b)^2 + rab)$$

$$a^3 - b^3 = (a-b)((a-b)^2 + rab)$$

$$a^3 - b^3 = (a-b)((a-b)^2 + rab)$$

$$(a-b)(a^2 + ab + b^2) = a^3 - b^3$$

$$a^3 - b^3 = (a-b)((a-b)^2 + rab)$$