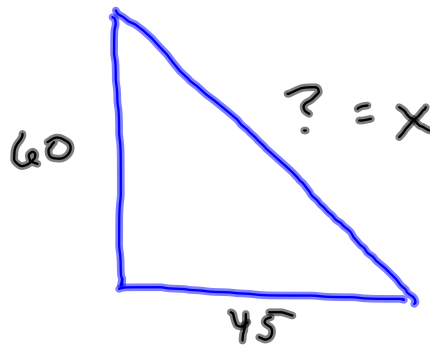


73 5.8

17



$$(5^2)^2 = 5^2(2)(2)$$

Ladrey

$$60^2 + 45^2 = x^2$$

$$3600 + 2025 = x^2$$

$$x^2 = 5625$$

$$x^2 - 5625 = 0$$

$$x^2 - 3^2 \cdot 5^4 = 0$$

$$x^2 - 3^2 \cdot (5^2)^2 = 0$$

$$x^2 - (3 \cdot 5^2)^2 = 0$$

$$x^2 - (75)^2 = 0$$

$$(x - 75)(x + 75) = 0$$

$$\boxed{x = 75} \text{ or } x = -75$$

$$\begin{array}{r} 3 \overline{) 5625} \\ \underline{3 \overline{) 1875}} \\ 5 \overline{) 625} \\ \underline{5 \overline{) 125}} \\ 5 \overline{) 25} \\ \underline{5 \overline{) 5}} \end{array}$$

$$5625 = 3^2 \cdot 5^4$$

(17)

$$\frac{x^2}{2} + \frac{x}{20} = \frac{1}{10}$$

$$\text{LCD} = 20$$

$$\frac{20}{1} \cdot \frac{x^2}{2} + \frac{20}{1} \cdot \frac{x}{20} = \frac{20}{1} \cdot \frac{1}{10}$$

$$\frac{\cancel{20}^{\cancel{10}}}{1} \cdot \frac{x^2}{\cancel{2}} + \frac{\cancel{20}^{\cancel{1}}}{1} \cdot \frac{x}{\cancel{20}} = \frac{\cancel{20}^{\cancel{2}}}{1} \cdot \frac{1}{\cancel{10}}$$

$$\frac{10 \cdot x^2}{1 \cdot 1} + \frac{1 \cdot x}{1 \cdot 1} = \frac{2 \cdot 1}{1 \cdot 1}$$

$$10x^2 + x = 2$$

$$10x^2 + x - 2 = 0$$

$$\underline{10x^2 + 5x} - \underline{4x - 2} = 0$$

$$5x(2x+1) - 2(2x+1) = 0$$

$$(2x+1) \left(\frac{5x(2x+1)}{(2x+1)} - \frac{2(2x+1)}{(2x+1)} \right)$$

$$(2x+1)(5x-2) = 0$$

$$2x+1=0 \text{ or } 5x-2=0$$

$$2x = -1$$

$$5x = 2$$

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

$$x = \frac{2}{5}$$

$$\left\{ -\frac{1}{2}, \frac{2}{5} \right\}$$

$$(10)(-2) = -20$$

$$(5)(-4) = -20$$

$$5 - 4 = 1$$

$$(-5)^0 = 1$$

$$-5^0 = -1$$

||

$$-1 \cdot 5^0$$

$$6 - (-2) = 8$$

PEMDAS

$$(x^{-2})^3 = x^{(-2)(3)}$$

$$\left(\frac{4x^{-2}y^2}{12x^{-4}y^{-1}} \right)^3$$

$$= \left(\frac{4}{12} x^{-2-(-4)} y^{2-(-1)} \right)^3$$

$$= \left(\frac{1}{3} x^2 y^3 \right)^3 = \frac{1}{3} x^6 y^9$$

$$\frac{(4x^{-2}y^2)^3}{(12x^{-4}y^{-1})^2}$$

$$= \frac{4^3 x^{-6} y^6}{12^2 x^{-8} y^{-2}}$$

$$= \frac{4^3}{12^2} x^{-6-(-8)} y^{6-(-2)}$$

$$= \frac{4^3}{12^2} x^2 y^8 = \frac{4}{9} x^2 y^8$$

$$\frac{4^3}{12^2} = \frac{4^3}{(4 \cdot 3)^2}$$

$$= \left(\frac{1}{3} \right)^3 x^6 y^9$$

$$= \frac{1^3}{3^3} x^6 y^9 = \frac{1}{27} x^6 y^9$$

$$(-7)^3 (-7)^8 = (-7)^{11}$$

$$(x^y)^z = x^{yz}$$

$$\left(\frac{x}{y} \right)^z = \frac{x^z}{y^z}$$

$$\frac{4^3}{4^2} = \frac{4 \cdot 4 \cdot 4}{4 \cdot 4}$$

$$= \frac{4^3}{4^2 \cdot 3^2} = \frac{4^{3-2}}{3^2} = \frac{4}{3^2}$$

$$(xy)^z = x^z y^z$$

$$(4 \cdot 3)^2 = (4 \cdot 3)(4 \cdot 3)$$

$$= 4 \cdot 4 \cdot 3 \cdot 3$$

$$= 4^2 \cdot 3^2$$

Solve by factoring

$$x^2 - 5x - 6 = 0$$

METHOD 1

$$-6 = -1 \cdot 2 \cdot 3$$

$$(-2)(+3)$$

$$-2 + 3 = 1$$

$$(-1)(6)$$

$$-1 + 6 = 5$$

$$(+1)(-6)$$

$$1 - 6 = -5 \text{ Sweet!}$$

$$x^2 - 6x + 1x - 6 \text{ etc.}$$

FACTORS of
-6 that
add to
-5

METHOD 2

$$-5 = -6 + 1 \quad (-6)(1) = -6$$

Sweet!

$$x^2 - 6x + 1x - 6$$

$$= x(x-6) + 1(x-6)$$

$$= (x-6)(x+1) = 0$$

$$x-6 = 0 \quad \text{OR} \quad x+1 = 0$$

$$x = 6 \quad \text{OR} \quad x = -1$$