Warm Up April 8, 2019

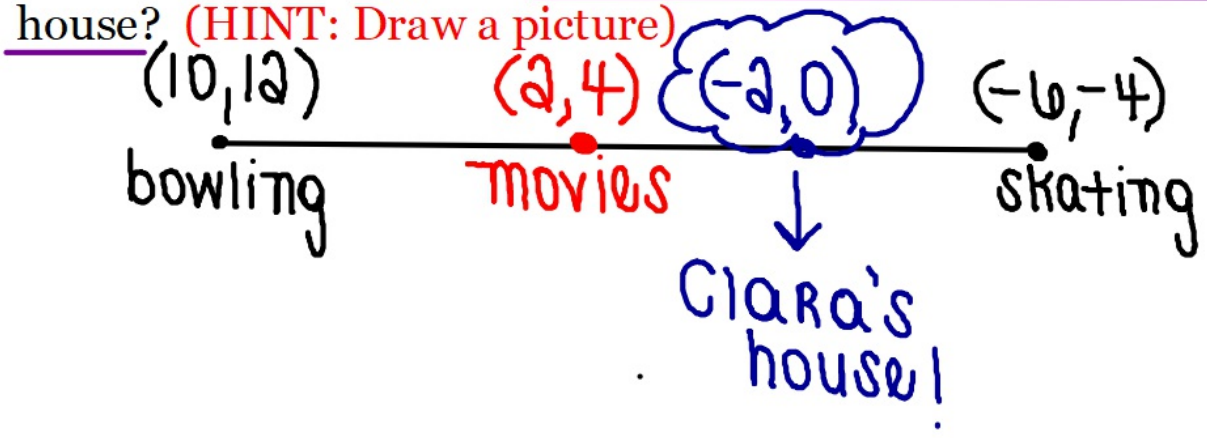
1.) Simplify the rational expression below:

$$\frac{4a^4b^2c}{12a^2b^{-5}c^3}$$

$\frac{1}{3}a^{4-2}b^{2-(-5)}c^{1-3}$

$\frac{1a^2b^7}{3c^2} = \frac{a^2b^7}{3c^2}$

2.) Clara created a coordinate grid of her city. The bowling alley is located at (10, 12) and the skating rink is located at (-6, -4). Halfway between the bowling alley and skating rink is the movie theater. Clara's house is halfway between the movie theater and skating rink. What are the coordinates of Clara's house? (HINT: Draw a picture)



#4 $x^2 + 61 = 1 - 17x$

$-1 \quad -1$

$x^2 + 60 = -17x$

$+17x \quad +17x$

$x^2 + 17x + 60 = 0$

#5 $3x^2 + 112 = 2x^2 + 22x$

$-2x^2 \quad -2x^2$

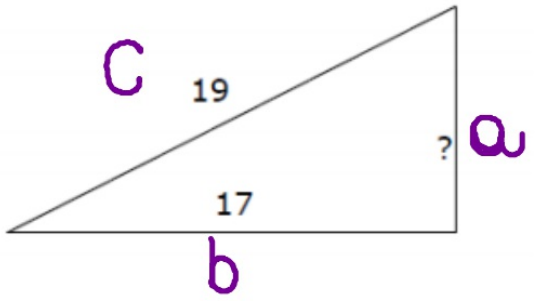
$x^2 + 112 = 22x$

$-22x \quad -22x$

$x^2 - 22x + 112 = 0$

Find the length of the missing sides using the Pythagorean Theorem.

$$a^2 + b^2 = c^2$$



$$(a)^2 + (17)^2 = (19)^2$$

$$a^2 + 289 = 361$$

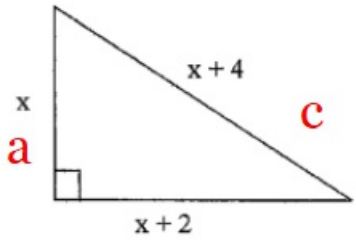
$$-289 \quad -289$$

$$\sqrt{a^2} = \sqrt{72}$$

$$a = 8.49$$

Pythagorean Theorem with Quadratics

Use the Pythagorean Theorem to find the missing sides.



$$a^2 + b^2 = c^2$$

$$(x)^2 + (x+2)^2 = (x+4)^2$$

$$x^2 + (x+2)(x+2) = (x+4)(x+4)$$

$$x^2 + x^2 + 2x + 2x + 4 = x^2 + 4x + 4x + 16$$

$$2x^2 + 4x + 4 = x^2 + 8x + 16$$

$$-x^2 - 8x - 16 \quad -x^2 - 8x - 16$$

$$x^2 - 4x - 12 = 0$$

$ac = -12$

-1	12
-2	6
-3	4

$$(x+2)(x-6) = 0$$

$x + 2 = 0$ ~~$x - 6 = 0$~~

$-2 \quad -2$ ~~$+6 \quad +6$~~

~~$x = -2$~~ ~~$x = 6$~~

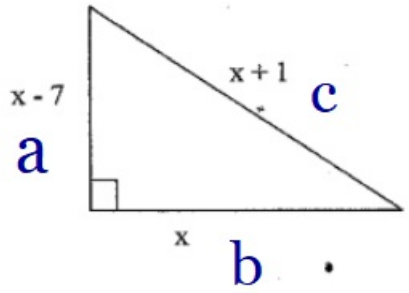
$x = 6$

$x + 2 = 8$

$x + 4 = 10$

Pythagorean Theorem with Quadratics

Use the Pythagorean Theorem to find the missing sides.



$$a^2 + b^2 = c^2$$

$(x-7)^2 + (x)^2 = (x+1)^2$

$(x-7)(x-7) + x^2 = (x+1)(x+1)$

$x^2 - 14x + 49 + x^2 = x^2 + 2x + 1$

$2x^2 - 14x + 49 = x^2 + 2x + 1$

$-x^2 - 2x - 1 \quad -x^2 - 2x - 1$

$x^2 - 16x + 48 = 0$

$(x-12)(x-4) = 0$

$x - 12 = 0 \quad x - 4 = 0$

$+12 \; +12 \quad +4 \; +4$

$x = 12 \quad x = 4$

$x = 12$

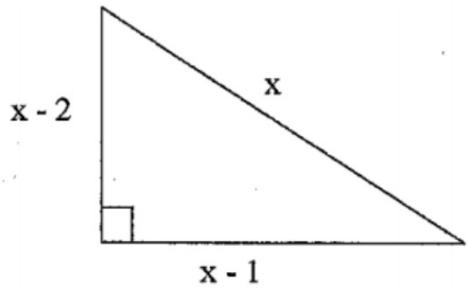
$x + 1 = 13$

$x - 7 = 5$

Pythagorean Theorem with Quadratics

Use the Pythagorean Theorem to find the missing sides.

a



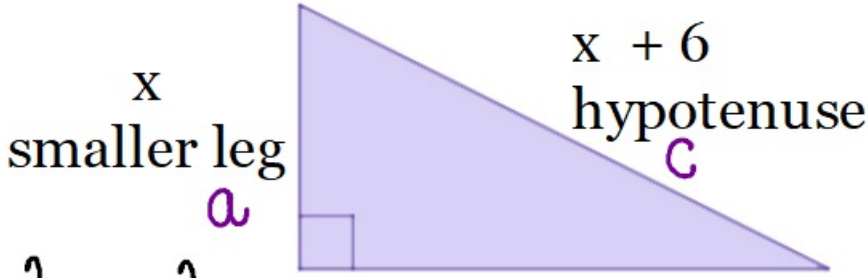
c

b

$(\quad)^2 + (\quad)^2 = (\quad)^2$

Pythagorean Theorem with Quadratics

The larger leg of a right triangle is 3 centimeters longer than its smaller leg. The hypotenuse is 6 centimeters longer than the smaller leg. How many centimeters long is the smaller leg?



$a^2+b^2=c^2$

$(x)^2+(x+3)^2=(x+6)^2$

$x^2+(x+3)(x+3)=(x+6)(x+6)$

$x^2+x^2+6x+9=x^2+12x+36$

$2x^2+6x+9=x^2+12x+36$

$-x^2-12x-36 \quad -x^2-12x-36$

$x^2-6x-27=0$

$(x-9)(x+3)=0$

$x-9=0 \quad x+3=0$

$+9 \quad +9$

$x=9$

Pythagorean Theorem with Quadratics

The larger leg of a right triangle is 7 inches longer than its smaller leg. The hypotenuse is 8 inches longer than the smaller leg. How many centimeters long is the smaller leg?

Label your picture!