

Warm Up

January 17, 2017

Solve.

$$6x^2 - 45x = 24$$

$$\begin{array}{r} 6x^2 - 45x = 24 \\ \underline{-24 \quad -24} \\ 6x^2 - 45x - 24 = 0 \\ \frac{6x^2}{3} - \frac{45x}{3} - \frac{24}{3} = 0 \\ 3(2x^2 - 15x - 8) = 0 \end{array}$$

$$3\left(x - \frac{16}{2}\right)\left(x + \frac{1}{2}\right) = 0$$

$$3(x - 8)(2x + 1) = 0$$

~~3=0~~

$$x - 8 = 0$$

$$\begin{array}{r} +8 \quad +8 \\ \hline x = 8 \end{array}$$

$$2x + 1 = 0$$

$$\begin{array}{r} -1 \quad -1 \\ \hline 2x = -1 \\ \frac{2x}{2} = \frac{-1}{2} \\ x = -\frac{1}{2} \end{array}$$

~~a.c
-16
-16
-15
b~~

4,4
8,2
16,1

a . c

~~-16~~

~~-16~~

~~-15~~

b

16
 \wedge
 $16 \ 1$
 $8 \ 2$
 $4 \ 4$

~~1, 16
~~2, 8
4, 4~~~~

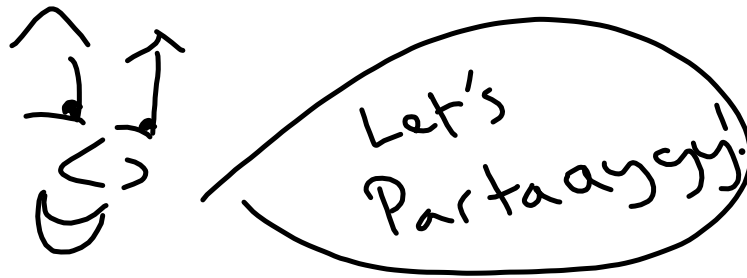
a.c
-16

-16

1

-15

b



Factor.

$$5x^2 - 125$$

$5(x^2 - 25)$

$5(x+5)(x-5)$

34 slope $\frac{\text{rise}}{\text{run}}$

$$\begin{array}{l} x_1, y_1 \\ (4, -3) \\ x_2, y_2 \\ (-6, 4) \end{array}$$

$$\begin{aligned} \text{slope} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{4 - (-3)}{-6 - 4} = \frac{7}{-10} \end{aligned}$$

(35)

$$y = mx + b$$

← slope ← y-int

$$\begin{array}{r} -2y - x = -2 \\ +x \quad +x \end{array}$$

$$\hline -2y = -2 + x$$

$$\begin{array}{r} -2 \\ -2 \end{array}$$
$$y = 1 - \frac{1}{2}x$$

$$\boxed{y = -\frac{1}{2}x + 1}$$

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

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

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

34
Slope

$$P1 (x_1, y_1) = (4, -3)$$

$$P2 (x_2, y_2) = (-6, 4)$$

rise
run

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-3)}{-6 - 4}$$

$$= \frac{7}{-10}$$

$$= -\frac{7}{10}$$

(35)

$$y = \overset{\text{slope}}{m}x + \overset{\text{y-intercept}}{b}$$

$$-2y - 1x = -2$$

$$+2 \quad +2$$

$$-2y - 1x + 2 = 0$$

$$+2y \qquad \qquad +2y$$

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

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

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

$$b = 1$$

$$y = mx + b$$

$$m_1 = \frac{5}{2}$$

$$m_2 = -\frac{2}{5}$$

Parallel Lines

↳ same slope

Perpendicular Lines

↳ Slopes are negative
reciprocals

$$y = mx + b$$

$$(4, 5)$$

$$y = 6x - 1$$

$$m_1 = 6$$

$$m_2 = -\frac{1}{6}$$

$$y = -\frac{1}{6}x + \frac{17}{3}$$

$$y = -\frac{1}{6}x + b$$

$$5 = -\frac{1}{6}(4) + b$$

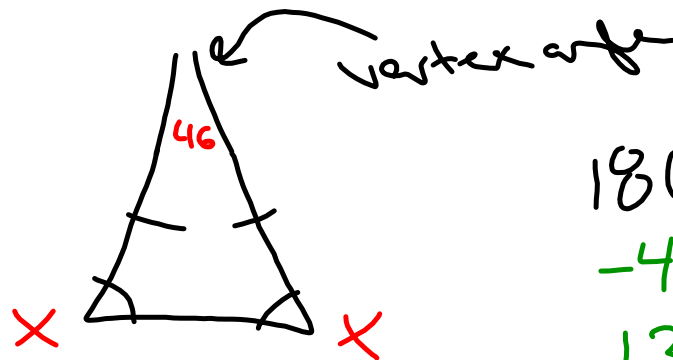
$$5 = -\frac{4}{6} + b$$

$$5 + \frac{4}{6} = b$$

$$b = 5 + \frac{4}{6}$$

$$= \frac{31}{6}$$

Q 9



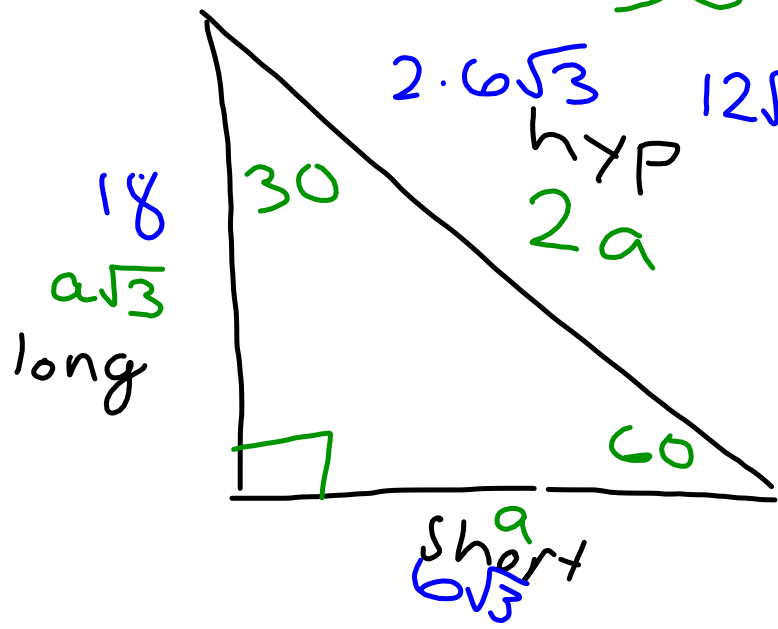
$$180 = 46 + 2x$$

$$-46 \quad -46$$

$$134 = 2x$$

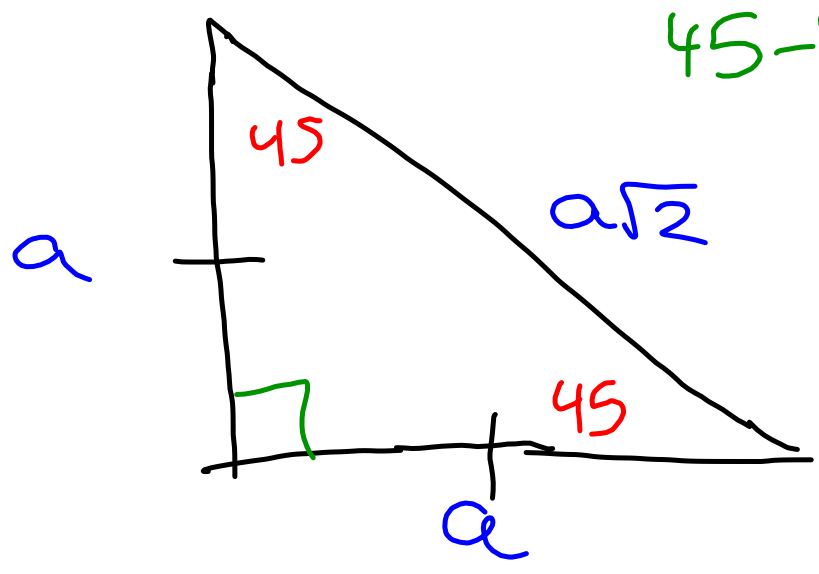
$$x = 67$$

30-60-90



$2 \cdot 6\sqrt{3}$ $12\sqrt{3}$ $18 = a\sqrt{3}$
 hyp
 $2a$
 $\sqrt{3} \cdot \frac{18}{\sqrt{3}} = a$
 $\frac{18\sqrt{3}}{3} = a$
 $a = 6\sqrt{3}$

45-45-90



(44)

Longer leg = 18

$$\frac{a\sqrt{3}}{\sqrt{3}} = 18$$

$$a = \frac{18 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}}$$

$$\frac{18\sqrt{3}}{3} = 6\sqrt{3} = a$$

$$\text{hyp} = 2a = 2(6\sqrt{3})$$

$$= 12\sqrt{3}$$

$$\text{short} = 6\sqrt{3}$$

$$\text{Circumference} = 2\pi r$$

$$\text{Area} = \pi r^2$$

30 Solve by substitution

$$3b - a = -7$$

$$5a + 6b = 14 \quad \boxed{1} \text{ solve for } a.$$

$$\begin{array}{r} 3b - a = -7 \\ + a \quad + a \\ \hline \end{array}$$

$$\begin{array}{r} 3b = a - 7 \\ + 7 \qquad \qquad + 7 \\ \hline \end{array}$$

$$a = 3b + 7$$

$$5(3b + 7) + 6b = 14$$

$$15b + 35 + 6b = 14$$

$$21b + 35 = 14$$

$$\begin{array}{r} 21b + 35 = 14 \\ -35 \quad -35 \\ \hline \end{array}$$

$$\frac{21b}{21} = \frac{-21}{21}$$

$$b = -1$$

$$a = 3(-1) + 7$$

$$-3 + 7$$

$$a = 4$$

(55)

$$\cancel{x^4} - 3x^2 - 4$$

$$\left(\overset{2}{x} - \overset{2}{4} \right) \left(\overset{2}{x} + \overset{2}{1} \right)$$

Diff
of
□

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

~~$$x^2 + 4x - 3 = 0$$~~

q.c
-4

1
4

-3
b

$$x^2 + 1 = 0$$
$$\sqrt{x^2} = \sqrt{-1}$$

x = not real

§ 7

$$\text{Slope } m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{RISE}}{\text{RUN}}$$

$$y = mx + b$$

slope \uparrow y-intercept \uparrow

(34)

$P_1 (4, -3)$
 x_1, y_1

$P_2 (-6, 4)$
 x_2, y_2

$$m = \frac{-7}{10} = \frac{7}{-10} = -\frac{7}{10}$$

(35)

$$y = mx + b$$

$$\begin{array}{r} -2y - x = -2 \\ \quad \quad \quad + x \quad \quad \quad + x \end{array}$$

$$\begin{array}{r} -2y = (x - 2) \\ \quad \quad \quad -2 \quad \quad \quad -2 \end{array}$$

$$y = \frac{x}{-2} + \frac{-2}{-2}$$

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

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

ANSWER
✓

$$(37) y = 6x - 1$$

$$\text{+ thru } (4, 5)$$

$$y = mx + b$$

$$y = -\frac{1}{6}x + b$$

$$0 = -\frac{1}{6}(4) + b$$

$$\left(\frac{4}{6}\right) + \left(\frac{1}{6}\right)$$

$$\frac{17}{3} = b$$

$$m_1 = \frac{1}{2}$$

$$\perp m_2 = -\frac{2}{7}$$

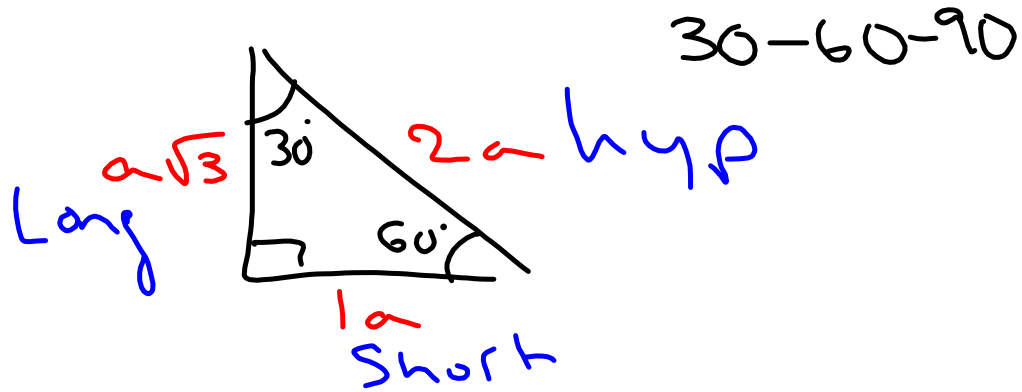
Parallel Lines

↳ Slopes are same

$$y = -\frac{1}{6}x + \frac{17}{3}$$

Perpendicular Lines

↳ Slopes are negative reciprocals



45

$$\text{hyp} = 3:1$$

$$\frac{2a}{2} = \frac{3}{2}$$

$$a = \frac{3}{2}$$

$$\text{Longer} = a\sqrt{3}$$

$$= \frac{3\sqrt{3}}{2}$$

$$\text{Short} = a$$

$$= \frac{3}{2}$$

$$\text{Area} = \pi r^2$$

$$= 2\pi r$$

Circumference