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College Algebra Extra Credit 4/9/2019

§8.1 HW #12

$$\begin{cases} 0.07x - 5000r = 210 & [1] \\ 0.07x + 6000r = 980 & [2] \end{cases}$$

Class chooses to mult. [1] by -1 or both sides

opposites

$$\begin{array}{r} -0.07x + 5000r = -210 \quad [1] \\ +\ 0.07x + 6000r = 980 \\ \hline 0 + 11000r = 770 \end{array}$$

$$\frac{11000r}{11000} = \frac{770}{11000}$$

$$r = .07$$

Now plug in to find x.
Class chooses [2]

$$0.07x + 6000r = 980$$

$$0.07x + 6000(0.07) = 980$$

$$0.07x + 420 = 980$$

$$-420 \quad -420$$

$$\frac{0.07x}{0.07} = \frac{560}{0.07}$$

$$x = 8000$$

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College Algebra Extra Credit 4/9/2019

§9.1 HW #12

$$\begin{cases} 0.07Y - 5000r = 210 & [1] \\ 0.07Y + 6000r = 980 & [2] \end{cases}$$

Class chooses to mult. [1] by -1 or both sides

Opposites

$$+\begin{array}{r} -0.07Y + 5000r = -210 \\ 0.07Y + 6000r = 980 \end{array} \quad [1]$$

$$0 + 11000r = 770$$

$$\frac{11000r}{11000} = \frac{770}{11000}$$

$$r = .07$$

Now plug in to find Y

Class chooses [2]

$$0.07Y + 6000r = 980$$

$$0.07Y + 6000(0.07) = 980$$

$$0.07Y + 420 = 980$$

$$-420 \quad -420$$

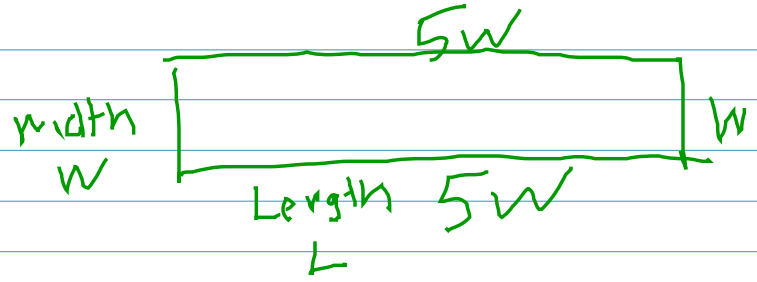
$$\frac{0.07Y}{.07} = \frac{560}{.07}$$

$$Y = 8000$$

§3.1 #13

The perimeter of a rectangular floor is 120 feet. Find the dimensions of the floor if the length is five times the width

$L = 5W$



$P = 120 \text{ ft}$

$P = W + 5W + W + 5W$

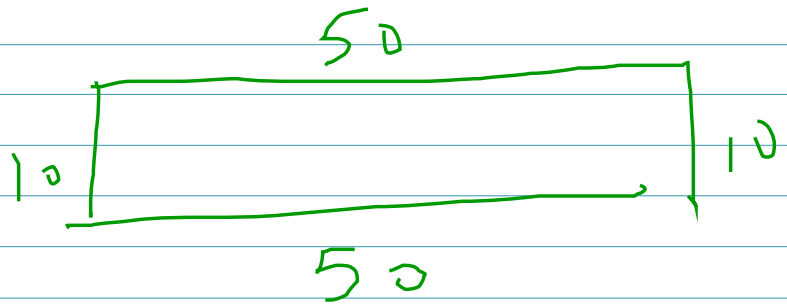
$\frac{120}{12} = \frac{12W}{12}$

$10 = W$

$L = 5W$

$L = 5(10)$

$L = 50$



§8.1 HW #7

$$\begin{cases} 3x+y=5 & [1] \\ 6x+2y=3 & [2] \end{cases}$$

Attalah has chosen elimination, and has suggested we mult. [1] by -2

$3x+y=5$ [1]

$-2(3x+y) = (5)(-2)$

$$\begin{cases} -6x-2y=-10 & [1] \\ 6x+2y=3 & [2] \end{cases}$$

$0+0=-7$

$0=-7$

false

(a contradiction)

No Solution

[1] $3x+y=5$

$y=-3x+5$

[2] $6x+2y=3$

$\frac{2y}{2} = \frac{-6x+3}{2}$

$y = \frac{-6x}{2} + \frac{3}{2}$

$y=-3x+\frac{3}{2}$

$\frac{-3 \text{ rise}}{1 \text{ run}}$

§3.6 #12 Solve the system

$$\begin{cases} x+y+4=0 & [1] \\ x^2+y^2+5y-4x=-4 & [2] \end{cases}$$

Vrishti chooses to solve for y in [1]

$x+y+4=0$

$y=-x-4$ [1]

$x^2+y^2+5y-4x=-4$ [2]

$(-x-4)^2$ SW

$(-x-4)(-x-4)$

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

$x^2+8x+16$

$x^2+(-x-4)^2+5(-x-4)-4x=-4$

$x^2+x^2+8x+16-5x-20-4x=-4$

$2x^2-1x-4=-4$

$+4 \quad +4$

$2x^2-1x=0$

$2x^2 - 1x = 0$

$x(2x-1) = 0$

$x = 0$ $\qquad$ $2x - 1 = 0$

$+1 \quad +1$

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

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

$x = 0$

$(0, ?)$ $\left(\frac{1}{2}, ?\right)$

Vladimir chooses b

pug into $y = -x - 4$

If $x = 0$, then

$y = -(0) - 4$

$y = 0 - 4$

$y = -4$

$(0, -4)$

If $x = \frac{1}{2}$, then

$y = -\left(\frac{1}{2}\right) - 4$

$y = \frac{-1}{2} - \frac{4 \cdot 2}{1 \cdot 2}$

$y = \frac{-1}{2} - \frac{8}{2}$

$y = \frac{-9}{2}$

$\left(\frac{1}{2}, -\frac{9}{2}\right)$

$(0, -4)$
$x \quad y$

[1] $x + y + 4 = 0$

$0 + (-4) + 4 = 0$

$0 + 0 = 0$

$0 = 0$ ✓

$\left(\frac{1}{2}, -\frac{9}{2}\right)$
$x \quad y$

$x + y + 4 = 0$

$\frac{1}{2} + \frac{-9}{2} + 4 = 0$

$\frac{1 + (-9)}{2} + 4 = 0$

$\frac{-8}{2} + 4 = 0$

$-4 + 4 = 0$

$0 = 0$ ✓

$(0, -4)$ ✓ $\quad\quad$ $\left(\frac{1}{2}, -\frac{9}{2}\right)$ ✓

$x \quad y \quad\quad x \quad y$

SW

$\left(\frac{1}{2}\right)^2$

$\frac{1}{2} \cdot \frac{1}{2}$

$\frac{1}{4}$

[2] $x^2 + y^2 + 5y - 4x = -4$

$0^2 + (-4)^2 + 5(-4) - 4(0) = -4$

$0 + 16 - 20 - 0 = -4$

$-4 = -4$ ✓

$x^2 + y^2 + 5y - 4x = -4$

$\left(\frac{1}{2}\right)^2 + \left(\frac{-9}{2}\right)^2 + 5\left(\frac{-9}{2}\right) - 4\left(\frac{1}{2}\right) = -4$

$\frac{1}{4} + \frac{81}{4} + \frac{-45}{2} - \frac{4}{2} = -4$

$\frac{82}{4} - \frac{49}{2} = -4$

$\frac{41}{2} - \frac{49}{2} = -4$

$\frac{-8}{2} = -4$

$-4 = -4$ ✓

linear

$$\begin{cases} 2x+3y=6 \\ 4x-2y=8 \end{cases}$$

All exponents on x or y are 1

non-linear

$$\begin{cases} x^2-y^2=4 \\ x^2+y^2=8 \end{cases}$$

At least one x or y has an exponent that is 2.

Must check answer.

§8.6 #15

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

$2x^2-xy=6$ (2)

Mult (2) by 2

$4x^2-2xy=12$ (2)

$+\ x^2+2xy=3$ (1)

$\frac{5x^2}{5}=\frac{15}{5}$

$x^2=3$

$x=\pm\sqrt{3}$

$x=\sqrt{3} \quad x=-\sqrt{3}$

$((\sqrt{3},0),(-\sqrt{3},0))$

If $x=\sqrt{3}$

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

$(\sqrt{3})^2+2\sqrt{3}y=3$

$3+2\sqrt{3}y=3$

$-3 \qquad -3$

$\frac{2\sqrt{3}y=0}{2\sqrt{3}\quad 2\sqrt{3}}$

$y=0$

If $x=-\sqrt{3}$

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

$(-\sqrt{3})^2+2(-\sqrt{3})y=3$

$3-2\sqrt{3}y=3$

$-3 \qquad -3$

$\frac{-2\sqrt{3}y=0}{-2\sqrt{3}\quad -2\sqrt{3}}$

$y=0$

$(\sqrt{3}, 0)$ ✓

$x^2 + 2xy = 3$

$(\sqrt{3})^2 + 2(\sqrt{3})(0) = 3$

$3 + 0 = 3$

$3 = 3$ ✓

$2x^2 - xy = 6$

$2(\sqrt{3})^2 - (\sqrt{3})(0) = 6$

$2 \cdot 3 - 0 = 6$

$6 - 0 = 6$

$6 = 6$ ✓

$(-\sqrt{3}, 0)$ ✓

$x^2 + 2xy = 3$

$(-\sqrt{3})^2 + 2(-\sqrt{3})(0) = 3$

$3 + 0 = 3$

$3 = 3$ ✓

$2x^2 - xy = 6$

$2(-\sqrt{3})^2 - (-\sqrt{3})(0) = 6$

$2 \cdot 3 - 0 = 6$

$6 - 0 = 6$

$6 = 6$ ✓