homework help



Pick up the



Powell was trying to solve the quadratic equation $x^2 + 2.5x - 1.5 = 0$. "I think I need to use the Quadratic Formula because of the decimals," she told Walter. Walter replied, "I'm sure there's another way! Can't we rewrite this equation so there aren't any decimals?"

What is Walter talking about? Rewrite the equation so that it has no decimals. You don't need to solve it!

$$x^2 + 2.5 \times -1.5 = 0$$

$$10x^{2} + 25x - 15 = 0$$

$$2x^{2} + 5x - 3 = 0$$

Re-write the following three equations (or system), but do **<u>not</u>** solve

a.
$$100x^2 + 100x = 2000$$

$$\chi^2 + \chi = 20$$

b.
$$15x + 10y = -20$$
 $\Rightarrow 3x + 2y = -4$ $7x - 2y = 24$ $7x - 2y = 24$

c.
$$\frac{1}{3}x^2 + \frac{x}{2} - \frac{1}{3} = 0$$

$$6.\frac{1}{3}x^{2} + 6.\frac{x}{2} = 0.6$$

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

consider each of the following equations and systems, would substitution make them easier to solve? What expression might you temporarily replace with *U*? $= M^2 + 5m - 24$

You do not need to actually solve the equation(s).

a.
$$(m^2 + 5m - 24)^2 - (m^2 + 5m - 24) = 6$$

$$V^{2} - V = 6$$

$$V^{3} - U - 6 = 0$$

$$V = 3$$

$$V = -2$$

$$M^2 + 5m - 24 = 3$$
 $M^2 + 5m - 24 = -2$

$$(4x^2 + 4x - 3)^2 = (x^2 - 5x - 6)^2$$



(a)
$$5x-2y=8$$
 (b) $xy + 3x = 2$

$$xy + 3x = 2$$

$$-2y = 8-5x$$

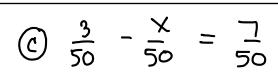
$$y + 3 = \frac{2}{x}$$

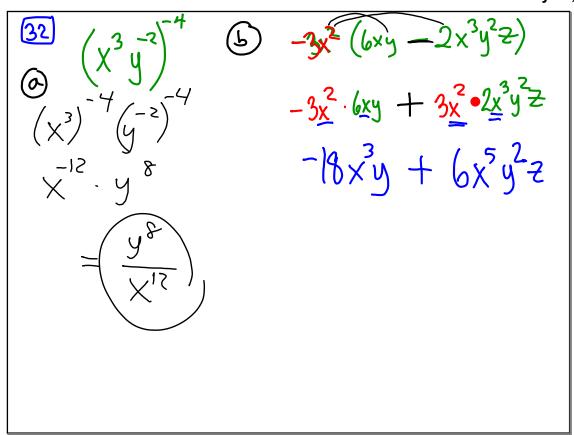
$$y = -4 + \frac{5}{5}x$$

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

$$y = \frac{8-5x}{-2}$$







35 @ circle radius 12
$$(-2,13)$$
 $(x^2+y^2=r^3)$

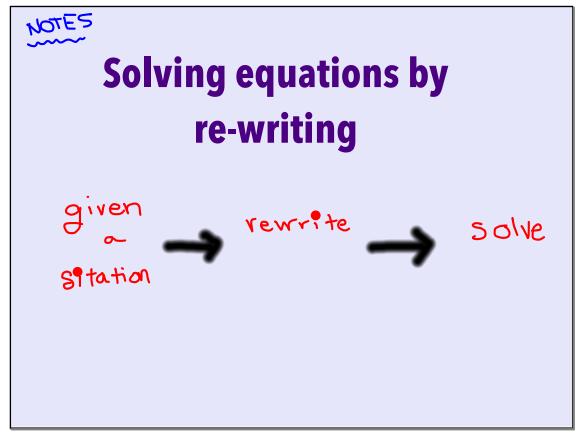
(b) center (-1,-4) radius 1

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The strategy used in the warm up can be described as:

Solving by re-writing

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Example 1

(X-1)(X-3) + (X)
$$\frac{2}{x-1}$$
 = $\frac{5-x}{x}$ (x-1)(X)

multiply by X and X-1

(X-1)(X-3) + 2x = $\frac{5x-5-x^2+x}{x^2-3x-x+3}$ + $\frac{2x}{2x}$ = $\frac{5x-5-x^2+x}{2x^2-2x+3}$ = $\frac{6x-5}{2x^2-6x}$ + $\frac{6x-5}{2x^2-6x}$ + $\frac{6x-5}{2x^2-4x+4}$ = $\frac{6x-5}$

Example 2 - Rewrite to a familiar form

$$x^{2} + y^{2} + 10x + 8y = 8$$

$$x^{2} + 10x + 25 + 4y^{2} + 8y + 16 = 8 + 25 + 16$$

$$(x+5)^{2} + (y+4)^{2} = 49$$

$$(x+5)^{2} + (y+4)^{2} = 7$$

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

$$0 = (x-3)(x-5)$$
 $0 = 2(x-3)(x-5)$

ZPP

$$(x-3)=0$$
 $(x-3=0$ $x-5=0$

$$\chi=3$$
 $\chi=3$ $\chi=5$

both have Same roots ROOTS

- (1) A root is a value that, as an input, makes a function turn to 0
- (2) A value of a root is the same as its x-intercept(s)
- 3) Functions that have the same 100ts are not necessarily equilvant.



Assignment:

3 45-46 , 49-50, 53-54

Optional

just for

fun

challenge system

$$\frac{\sqrt{x^2-15x}}{2y} = 5$$
 $3\sqrt{x^2-15x} - 3y = 27$

bring me your answer tomorrow and Ill check A.

SO, now the infamous \$6

f.
$$\frac{\sqrt{x^2 - 15x}}{2y} = 5$$
$$3\sqrt{x^2 - 15x} - 3y = 27$$

Question # 39 deals with the infamous problem

$$\frac{2y \cdot \frac{\sqrt{x^2 - 15x}}{2y}}{\frac{3\sqrt{x^2 - 15x} - 3y}{3}} = \frac{27}{3}$$

$$\Rightarrow \frac{\sqrt{x^2 - 15x} = 10y}{\sqrt{x^2 - 15x} - y} = 9$$

$$\Rightarrow y = \frac{\sqrt{x^2 - 15x}}{10}$$

$$y = \sqrt{x^2 - 15x} - 9$$

$$\frac{2y \cdot \frac{\sqrt{x^2 - 15x}}{2y} = 2y \cdot 5}{\frac{3\sqrt{x^2 - 15x} - 3y}{3}} \Rightarrow \frac{\sqrt{x^2 - 15x} = 10y}{\sqrt{x^2 - 15x} - y = 9} \Rightarrow \begin{bmatrix} y = \frac{\sqrt{x^2 - 15x}}{10} \\ y = \sqrt{x^2 - 15x} - 9 \end{bmatrix}$$

Graciela and Walter realized they had a big mess to try to solve. "Wait," Graciela said. "There's an easier way. Let's use substitution to make this system simpler!"



$$\frac{\sqrt{x^2-15x}}{10} = \sqrt{x^2-15x} - 9$$

$$y = \frac{\sqrt{x^2-15x}}{10}$$

$$y = \sqrt{x^2-15x} - 9$$

