4.2 Solving Systems of Equations by Substitution

Monday, September 23, 2019 7:46 AM

Warm Up

Put the following equations into slope-intercept form.

$3x + y = 6$

$\frac{3}{2}x - \frac{5}{2}y = 13$

$7x + \frac{7}{2}y = \frac{4}{3}$

$\frac{3}{5}x - \frac{4}{3}y = -\frac{2}{3}$

$\frac{5}{9}x - \frac{5}{3}y = -\frac{5}{6}$

$-\frac{13}{4}x + \frac{17}{2}y = \frac{14}{3}$

Essential Question

How do you use substitution to solve a system of linear equations?

Goal: "I can. . .
Solve a system of equations using the substitution method."

Conceptual Question

If a system of equations has a solution, and that solution isn't infinite, the

solution is always where?

Example 1

With your table solve the following system without graphing.

$$y = 6x + 7$$

$$3x - 8y = 4$$

Solve the following systems using substitution.

a. $x = y + 6$

$x + y = 10$

b. $y = 2x - 1$

$2x + 3y = -7$

Example 2

Solve the following systems of equations.

$$y = 3x + 1$$
$$6x - 2y = -2$$

$$5x - y = -4$$
$$y = 5x - 4$$

Solve the following systems of equations.

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

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

Example 3

Rowan starts a lawn-mowing business. In their business, they have expenses and revenue. Rowan's expenses are the cost of the lawn mower and gas, and their revenue is $25 per lawn. At what point will Rowan's revenue exceed their expenses?

Happy Happy Funtime Amusement Park charges $12.50 for admission and then $0.75 per ride. River's Edge Awesome Sauce Park charges $18.50 for admission and then $0.50 per ride. For what number of rides is the cost the same at both parks?

Self-Evaluation QR

Homework

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