Warm Up

3/12

What is the easiest / most efficient way to solve this system?

$$2x + 4y = -2$$
$$3x + y = 7$$

Substitution!

$2x+4y=-2$
$3x+y=7$

$3x+y=7$
$-3x \quad -3x$
$y=-3x+7$

$2x+4(-3x+7)=-2$
$2x-12x+28=-2$
$-10x+28=-2$
$-28 \quad -28$
$-10x=-30$
$\frac{-10x}{-10}=\frac{-30}{-10}$
$x=3$

$3x+y=7$
$3(3)+y=7$
$9+y=7$
$-9 \quad -9$
$y=-2$

$(3,-2)$

Is there another additional way besides graphing?

Equivalent Expressions

$2x+4y=-2$
$-2x \quad -2x$
$\frac{4y}{4}=\frac{-2x}{4}-\frac{2}{4}$
$y=-\frac{1}{2}x-\frac{1}{2}$

$3x+y=7$
$-3x \quad -3x$
$y=-3x+7$

$2\left[-\frac{1}{2}x-\frac{1}{2}=-3x+7\right]$
$-x-1=-6x+14$
$+6x \quad +6x$
$5x-1=14$
$+1 \quad +1$
$\frac{5x}{5}=\frac{15}{5}$
$x=3$

Homework Questions?

Solve.

1. $y = 3 - 2x$, $y = 2 - 3x$ — $(-1,5)$
2. $x + y = 5$, $x = y + 7$ — $(6,-1)$
3. $x - y = 1$, $2x + y = 8$ — $(3,2)$
4. $3x - y = 9$, $y = x + 5$ — $(7,12)$
5. $3x + 4y = 26$, $-2x + y = 1$ — $(2,5)$
6. $y = 2x + 3$, $y = 4x + 4$ — $(-\frac{1}{2},2)$
7. $2x + 7y = 8$, $x + 5y = 7$ — $(-3,2)$
8. $y = 4x + 4$, $y = 2x + 8$ — $(2,12)$
9. $x + 3y = 17$, $2x + 3y = 22$ — $(5,4)$
10. $4x - 7y = 9$, $y = x - 3$ — $(4,1)$
11. $8x - 5y = 9$, $y = 2x - 4$ — $(\frac{11}{2}, 7)$
12. $2x + 4y = -2$, $3x + y = 7$ — $(3,-2)$
13. $3x + y = 5$, $2x + 3y = 8$ — $(1,2)$
14. $2x + 6y = 24$, $x - 4y = -2$ — $(6,2)$

#11

$8x - 5y = 9$

$y = 2x - 4$

$8x - 5(2x - 4) = 9$

$8x - 10x + 20 = 9$

$-2x + 20 = 9$

$-20 \quad -20$

$\frac{-2x}{-2} = \frac{-11}{-2}$

$x = \frac{11}{2}$

$y = 2x - 4$

$y = 2(\frac{11}{2}) - 4$

$y = 11 - 4$

$y = 7$

$(\frac{11}{2}, 7)$

Solve the following Systems of Equations using Substitution

1. $y + 11 = 6x$
   $-2x - 3y = -7$

2. $6x + 6y = -6$
   $5x + y = -13$

3. $3x + y = 5$
   $5x - 4y = -3$

4. $-3x + 3y = 4$
   $-x + y = 3$

5. $-3x - 3y = 3$
   $5x + y = -17$

6. $x + 3y = 1$
   $3x + 3y = 15$

7. $y = -2$
   $4x - 3y = 18$

8. $2x + y = 20$
   $6x - 5y = 12$

9. $-4x + y = 6$
   $-5x - y = 21$

10. $-5x + y = -3$
    $3x - 8y = 24$

Homework

Finish classwork