Systems of Equations Homework

Key

1. How many solutions does the system have: $\begin{cases} y = 4x + 2 \\ 2y = 8x + 10 \end{cases}$ → $\begin{cases} y = 4x+2 \\ y = 4x+5 \end{cases}$ Parallel lines → no solution

2. What is the solution to the system: $\begin{cases} 3x + 4y = 28 \\ x = 2y + 6 \end{cases}$

$3(2y+6)+4y = 28$
$6y+18+4y=28$
$10y = 10$
$y = 1$

$x = 2(1)+6$
$x = 8$

→ (8, 1)

3. Given the system: $\begin{cases} 3x - 2y = 12 \\ 4x - y = 11 \end{cases}$ what is the value of y in the solution?

$3x - 2y = 12$
$-2y = -3x + 12$
$y = \frac{-3x+12}{-2}$

$4x - y = 11$
$-y = -4x + 11$
$y = \frac{-4x+11}{-1}$

→ (2, -3) → $y = -3$

4. Given: $\begin{cases} 2x + y = 2 \\ 6x - 3y = 42 \end{cases}$ what is x + y?

$y = -2x + 2$
$y = \frac{-6x+42}{-3}$

→ (4, -6) → $4 + -6 = -2$

5. Solve by graphing:

a) $y = -2x + 1$
$y = -2x - 3$

no solution, parallel lines

b) $y = 2x + 6$
$4x - 2y = 8$

no solution, parallel lines

6. Solve using substitution:

a) $y = 4x - 8$
$y = 2x + 10$

$4x - 8 = 2x + 10$
$2x = 18$
$x = 9$

$y = 4(9) - 8$
$y = 28$

(9, 28)

b) $t = 0.2s + 10$
$4s + 5t = 35$

$4s + 5(.2s + 10) = 35$
$4s + 1s + 50 = 35$
$5s = -15$
$s = -3$ →

$t = .2(-3) + 10$
$t = 9.4$
→ (-3, 9.4)

7. Solve using elimination:

a) $2x + 5y = 17$
$6x - 5y = -9$

$8x = 8$
$x = 1$ →

$2(1) + 5y = 17$
$y = 3$

(1, 3)

b) $7x + 2y = 10$
$-7x + y = -16$

$3y = -6$
$y = -2$

$7x + 2(-2) = 10$
$7x - 4 = 10$
→ (2, -2)