

Math 105 - Homework 11

Name: _____

Solve the following systems of equations.

1.
$$\begin{aligned} 4x + 3y &= -7 \\ y &= 3 \end{aligned}$$

2.
$$\begin{aligned} x + y &= 4 \\ x - y &= 2 \end{aligned}$$

3.
$$\begin{aligned} 3x - y &= 6 \\ 2x + 3y &= 7 \end{aligned}$$

4.
$$\begin{aligned} y &= 4 - 2x \\ y &= 7 - x^2 \end{aligned}$$

5.
$$\begin{aligned} 2x - y &= -4 \\ 2x^2 - y &= 0 \end{aligned}$$

6.
$$\begin{aligned} \frac{x}{y} &= 10 \\ x + 2y &= 24 \end{aligned}$$

7.
$$\begin{aligned} ab &= 6 \\ a - b &= 1 \end{aligned}$$

8.
$$\begin{aligned} \log_2(x) + 2\log_2(y) &= 6 \\ \log_2(xy) &= 5 \end{aligned}$$

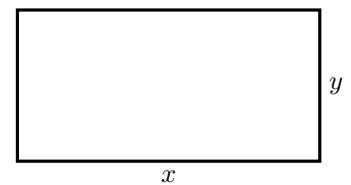
9. Suppose that $f(x) = Pe^{rx}$. If $f(0) = 100$ and $f(1) = 200$, then what are P and r ?

10. $f(x) = C \cdot 2^{-kx}$. If $f(3) = 4$ and $f(6) = 2$, then what are C and k ?

11. A bag of coins has a mix of quarters and dimes. There are 12 coins in the bag, and the total value of the coins is \$2.25. How many quarters and how many dimes are in the bag?

12. A family with 2 adults and 2 children spends \$32 to buy movie tickets. A family with 3 adults and 5 children spends \$60 dollars to buy movie tickets. How much do adult & child movie tickets cost?

13. A rectangle has perimeter 26 and area 40. What are the lengths of its sides? Hint, use the perimeter formula $P = 2x + 2y$ to find a substitution that you can use in the area formula.



14. **Extra credit.** Find the x -values where the line $y = x - 1$ intersects the ellipse $x^2 + 4y^2 = 25$.

