

Name: \_\_\_\_\_

MATH 101

Winter 2021

HW 9: Due 01/19

*“When Pam gets Michael’s old chair, I  
get Pam’s old chair. Then I’ll have two  
chairs. Only one to go.”*

*– Creed Bratton, The Office*

**Problem 1.** (10pt) Explain why the following system of equations does or does not have a solution:

$$\begin{cases} -2x + 3y = -15 \\ 4x + 6y = 6 \end{cases}$$

**Problem 2.** (10pt) Determine if the point  $(-2, -3)$  is a solution to the following system of equations:

$$-5x + 3y = 1$$

$$6x - 7y = -33$$

**Problem 3.** (10pt) Showing all your work, solve the following system of equations:

$$4x - y = -11$$

$$x + 5y = 13$$

**Problem 4.** (10pt) Showing all your work, solve the following system of equations:

$$4x - 5y = -6$$

$$6x + 3y = 12$$

**Problem 5.** (10pt) Showing all your work, solve the following system of equations:

$$\begin{aligned}3x - 2y &= 7 \\ -6x + 3y &= -11\end{aligned}$$

**Problem 6.** (10pt) Compute the following, simplifying as much as possible:

$$\frac{x}{x-1} + \frac{x+1}{x^2+4x-5}$$

**Problem 7.** (10pt) Compute the following, simplifying as much as possible:

$$\frac{3-x}{x^2-4} - \frac{5x}{x^2+5x-14}$$

**Problem 8.** (10pt) Compute the following, simplifying as much as possible:

$$\frac{x^2 + 5x - 6}{x^2 - 5x + 24} \cdot \frac{x^2 - 9}{x^2 + 8x - 9}$$



**Problem 9.** (10pt) Compute the following, simplifying as much as possible:

$$\frac{\frac{4x^2 - 9}{x^2 + 5x + 4}}{\frac{2x^2 - x - 6}{x^2 - 4x - 32}}$$

**Problem 10.** (10pt) Compute the following, simplifying as much as possible:

$$\frac{4x+3}{x-10} - \frac{\frac{x+6}{x-7}}{\frac{x^2-4x-60}{x^2-6x-7}}$$