

NAME:

**Problem 1 (7.5 points):** *What is the equation of the line that passes through the point (2,9) with slope -3?*

**Solution:**

Since  $m = -3$ , we can use the slope-intercept form to write the equation of the line as  $y = -3x + b$  for some  $b$ . We just need to figure out what  $b$  is. Plugging the point (2,9) into  $y = -3x + b$ , we obtain  $9 = -3(2) + b = -6 + b$ , so  $b = 15$ . Thus, the equation of the line is  $y = -3x + 15$ .

**Problem 2 (7.5 points):** *Solve the following system of linear equations:*

$$\begin{aligned}4x + y &= 13 \\3x - 2y &= 7.\end{aligned}$$

**Solution:**

Multiplying the first equation by 2, we obtain:

$$\begin{aligned}8x + 2y &= 26 \\3x - 2y &= 7.\end{aligned}$$

Adding the equations yields  $11x = 33$ , so  $x = 3$ . Substituting  $x = 3$  into the second equation gives  $9 - 2y = 7$ , so  $y = 2$ .

**Problem 3 (7.5 points):** *Find the slope,  $x$  intercept, and  $y$  intercept of the line whose equation is  $4x + 2y = 8$ .*

**Solution:**

The slope is  $m = -(4/2) = -2$ . We set  $x = 0$  to find the  $y$  intercept:  $4(0) + 2y = 8$ , so  $2y = 8$ , and the  $y$  intercept is 4. Now we set  $y = 0$  to find the  $x$  intercept:  $4x + 2(0) = 8$ , so  $4x = 8$ , and the  $x$  intercept is 2.