

NAME:

**Problem 1 (7.5 points):** *What is the equation of the line that passes through the point  $(1,10)$  with slope  $-5$ ?*

**Solution:**

Since  $m = -5$ , we can use the slope-intercept form to write the equation of the line as  $y = -5x + b$  for some  $b$ . We just need to figure out what  $b$  is. Plugging the point  $(1,10)$  into  $y = -5x + b$ , we obtain  $10 = -5(1) + b = -5 + b$ , so  $b = 15$ . Thus, the equation of the line is  $y = -5x + 15$ .

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

$$\begin{aligned}4x + y &= 18 \\3x - 2y &= 8.\end{aligned}$$

**Solution:**

Multiplying the first equation by 2, we obtain:

$$\begin{aligned}8x + 2y &= 36 \\3x - 2y &= 8.\end{aligned}$$

Adding the equations yields  $11x = 44$ , so  $x = 4$ . Substituting  $x = 4$  into the second equation gives  $12 - 2y = 8$ , so  $y = 2$ .

**Problem 3 (7.5 points):** *Find the slope,  $x$  intercept, and  $y$  intercept of the line whose equation is  $6x + 3y = 9$ .*

**Solution:**

The slope is  $m = -(6/3) = -2$ . We set  $x = 0$  to find the  $y$  intercept:  $6(0) + 3y = 9$ , so  $3y = 9$ , and the  $y$  intercept is 3. Now we set  $y = 0$  to find the  $x$  intercept:  $6x + 3(0) = 9$ , so  $6x = 9$ , and the  $x$  intercept is  $\frac{3}{2}$ .