Name: _____

Past due on: _____ Period: _____

3.2 – APK

Given: (x_1, y_1) & (x_2, y_2)

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

The slopes of perpendicular lines are opposite reciprocals.

Find the slope of the line that passes through each pair of points. Then identify the slope of a line perpendicular to it.

1. $(1, 12)$ & $(6, 22)$

$m =$ _____ $m_\perp =$ _____

2. $(-1, 2)$ & $(0, 5)$

$m =$ _____ $m_\perp =$ _____

3. $(-2, -3)$ & $(5, -4)$

$m =$ _____ $m_\perp =$ _____

4. $(2, -7)$ & $(-6, -4)$

$m =$ _____ $m_\perp =$ _____

Given: a point: (x_1, y_1) & a slope: m

Point-Slope Form: $y - y_1 = m(x - x_1)$

Slope-Intercept Form $y = mx + b$

Write the equation of a line – in slope-intercept form – that passes through the given point and has the given slope.

5. $(3, -8); m = -2$

6. $(-3, 4); m = 6$

7. $(6, -1); m = -\frac{5}{3}$

8. $(-2, -7); m = \frac{4}{5}$

Solve the system by substitution.

$$\begin{cases} y = x + 3 \\ y = 2x + 5 \end{cases}$$

Step 1 $y = x + 3$, $y = 2x + 5$ — *Both equations are solved for y.*

Step 2 $y = x + 3$, $2x + 5 = x + 3$ — *Substitute 2x + 5 for y in the first equation.*

Step 3 $2x + 5 = x + 3$; $-x - 5 \quad -x - 5$; $x = -2$ — *Solve for x. Subtract x and 5 from both sides.*

Step 4 $y = x + 3$, $y = -2 + 3$, $y = 1$ — *Write one of the original equations.* *Substitute –2 for x.*

Step 5 $(-2, 1)$ — *Write the solution as an ordered pair.*

Solve each system of equations by substitution. Write the solution as an ordered pair.

9. $y = x - 6$
   $y = 12 - x$

10. $y = 7 - 3x$
    $y = 2x - 8$

After the substitution step (see step 2, above), rid the equation of fractions by multiply both sides (all terms) by the common denominator.

11. $y = \frac{1}{3}x - 4$
    $y = -3x + 1$

12. $y = \frac{1}{2}x + \frac{11}{2}$
    $y = -2x + 19$