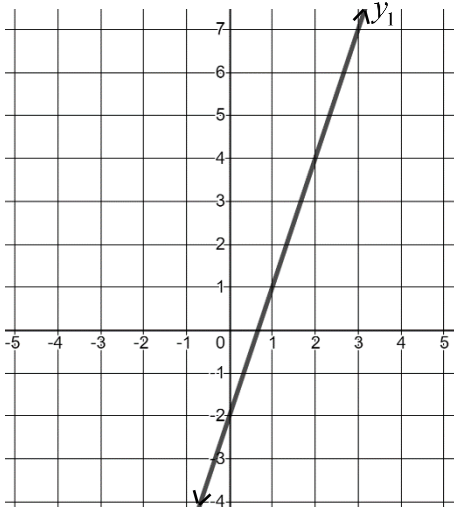Name: _____ Date: _____ Period: _____

Geometry 2.4 Parallel and Perpendicular Lines

For 1-2, graph the line y_2 so that it meets the given requirements. Then write the equations for y_1 and y_2.

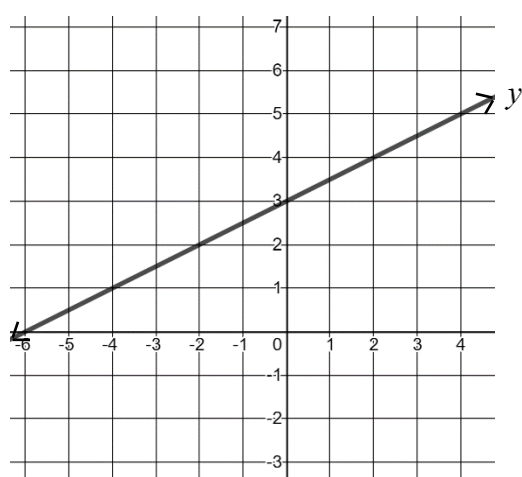**1.** $y_1 \parallel y_2$ and y_2 passes through $(0,3)$

Use slope-intercept form: $y = mx + b$

Equation for y_1 _____

Equation for y_2 _____

2. $y_1 \perp y_2$ and y_2 passes through $(-2,2)$

Use slope-intercept form: $y = mx + b$

Equation for y_1 _____

Use point-slope form: $y - y_1 = m(x - x_1)$

Equation for y_2 _____

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3. A parallelogram is a quadrilateral with opposite sides parallel to each other. Prove the figure to the right is a parallelogram by algebraically showing its opposite sides are parallel to each other.
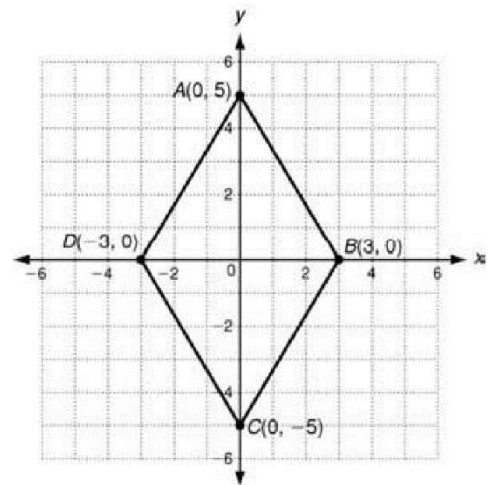
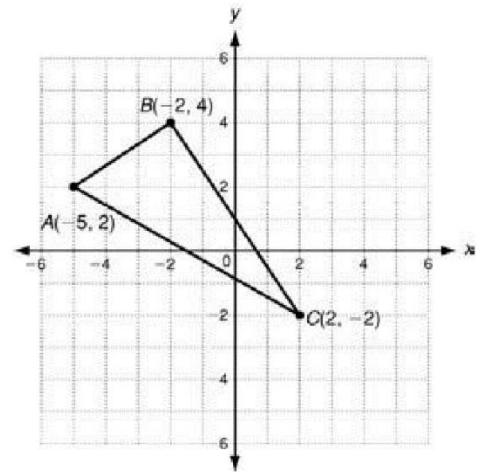**Show the slope (m) of each line.** $m = \dfrac{y_1 - y_2}{x_1 - x_2}$

Slope of AB = _____

Slope of DC = _____

Slope of AD = _____

Slope of BC = _____

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4. A right triangle is a triangle that has a right angle. Prove that the triangle below is a right triangle by algebraically showing it has a right angle. **Show that AB is perpendicular to BC by showing that their slopes are perpendicular.**

For 5-6, determine if the lines $y = f(x)$ **and** $y = g(x)$ **are parallel using the table of values.**

5.

x	f(x)	g(x)
0	20	22
1	35	37
2	50	52
3	65	67

6.

x	f(x)	g(x)
0	5	10
1	7	15
2	9	20
3	11	25

For 7-10, write the equation of the line that passes through the point and is parallel or perpendicular.

7. Through (-2, -5) and parallel to $y = x + 3$

Use point-slope form: $y - y_1 = m(x - x_1)$

8. Through (1, -3) and perpendicular to $y = -x$

Use point-slope form: $y - y_1 = m(x - x_1)$

9. Through (4, 5) and parallel to $y = \frac{1}{4}x - 4$

Use point-slope form $y - y_1 = m(x - x_1)$

10. Through (0, -4) and perpendicular to $y = -\frac{3}{2}x + 1$

Use point-slope form $y - y_1 = m(x - x_1)$

Name: _____ Date: _____ Period: _____