

Section 7.4 Extra Practice

1. For a line with each slope, state the slope of a line parallel to it. What is the slope of a line perpendicular to it?

a) $m = 3$

$m = 3$; $m = -\frac{1}{3}$ ✓✓ 2

b) $m = 0.4$

$m = \frac{2}{5}$; $m = -\frac{5}{2}$ ✓✓ 2

2. State the slopes of lines that are parallel to and lines that are perpendicular to each linear equation.

a) $y = 2x - 5$

$m = 2$; $m = -\frac{1}{2}$ ✓✓ 2

b) $2x + 5y - 1 = 0 \Rightarrow 2x - 1 = -5y$

$m = -\frac{2}{5}$; $m = \frac{5}{2}$ ✓✓ $-2/5x + 1/5 = y$ 2

3. For each pair of slopes, what is the value of k if the lines are parallel? What is the value of k if the lines are perpendicular?

a) $\frac{k}{3}, 4$ $\parallel k = 12$; $\perp k = -\frac{1}{4}$ 2
 $\perp k = -0.75$ ✓✓

b) $\frac{3}{5}, \frac{k}{15}$ $\parallel k = 9$
 $\perp \frac{-5}{3} = \frac{k}{15}$ $k = -25$ ✓✓

4. Identify whether the lines in each pair are parallel, perpendicular, or neither. Explain how you know.

a) $2x + 4y = 5$ and $-2x - 4y = 1$

$4y = -2x + 5$ $-2x - 1 = 4y$
 $y = -\frac{1}{2}x + \frac{5}{4}$ $-\frac{1}{2}x - \frac{1}{4} = y$
 b) $2x + 3y - 6 = 0$ and $3x - 2y - 8 = 0$

$2x - 6 = -3y$ $3x - 8 = 2y$
 $-\frac{2}{3}x + 2 = y$ $\frac{3}{2}x - 4 = y$
 1 2

Perpendicular
 - reciprocals
 1 2

5. Determine an equation of a line in the form $y = mx + b$ that is parallel to the line and passes through the given point.

a) $y = 4x - 3$, $(2, -3)$

$y = 4x + b$ $y = 4x - 11$ ✓
 $-3 = 4(2) + b$
 $b = -11$ ✓ 2

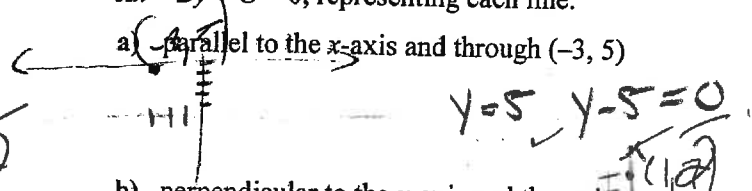
6. Write an equation of a line in the form $y = mx + b$ that is perpendicular to the line and passes through the given point.

a) $y = 3x + 1$, $(1, 4)$

$y = -\frac{1}{3}x + b$ ✓
 $4 = -\frac{1}{3}(1) + b$ $b = 4\frac{1}{3}$ or $\frac{13}{3}$
 $y = -\frac{1}{3}x + 4\frac{1}{3}$ ✓ 2

7. Determine an equation in general form, $Ax + By + C = 0$, representing each line.

a) parallel to the x-axis and through $(-3, 5)$

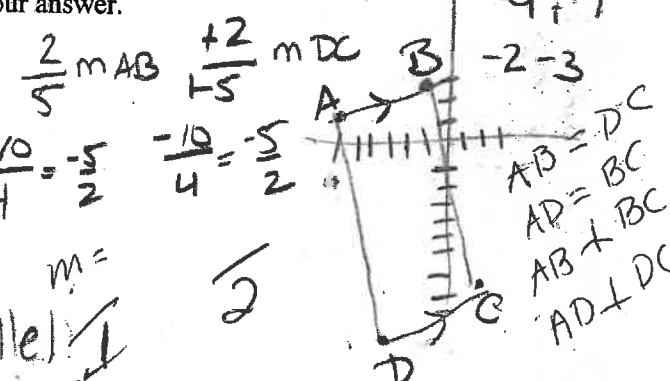


b) perpendicular to the x-axis and through $(1, 7)$



8. The four vertices of a quadrilateral are $A(-6, 1)$, $B(-1, 3)$, $C(3, -7)$, and $D(-2, -9)$.

a) Is the quadrilateral a rectangle, a parallelogram, or a trapezoid? Justify your answer.



Rectangle!
 AB / CD are parallel
 AD / BC " "
 AB and AD are \perp
 BC and DC are \perp