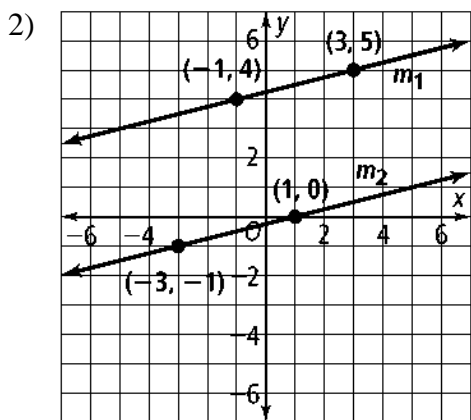
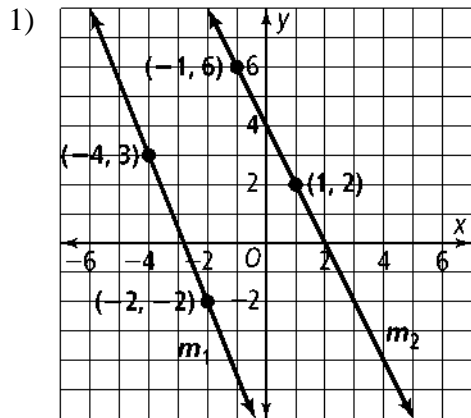


3.9 - Parallel and Perpendicular Lines in the Coordinate Plane

In #1 and 2, are lines m_1 and m_2 parallel? Explain and show work.

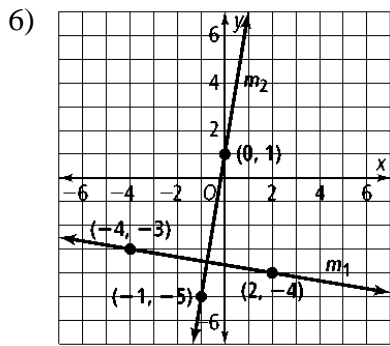
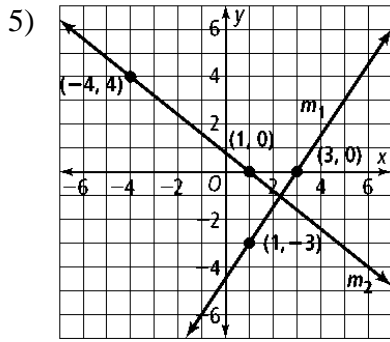


Write an equation of the line parallel to given line and contains point C.

3) $y = -5x + 12$; $C(-2, 1)$

4) $y = -\frac{2}{5}x + 5\frac{2}{5}$; $C(5, -2)$

In #5 and 6, are lines m_1 and m_2 perpendicular? Explain and show work.



Write an equation of the line perpendicular to the given line that contains P .

7) $P(-6, 5)$; $y = 2x - 3$

8) $P(4, 3)$; $y = -3x - 15$

Rewrite each equation in slope-intercept form. Then determine whether the lines are parallel, perpendicular or neither. Explain.

9) $2y = 15 + 4x$
 $6y - 30 = 12x$

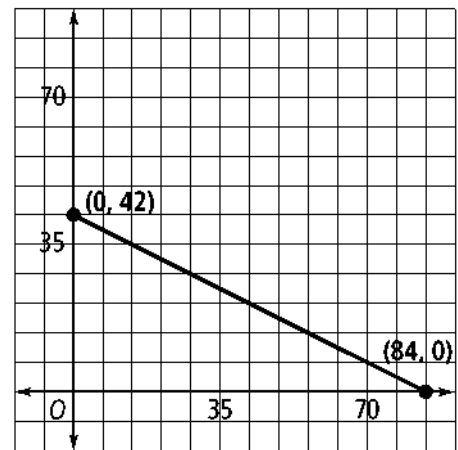
10) $10y + 130 = 50x$
 $-5y = 2x + 11$

11) $y - 1 = -x - 6$
 $y - 3 = -\frac{5}{6}(x - 5)$

12) A town's building code states that stairs and ramps must have a handrail. The sketch at the right has a scale of 7 in. to each grid space.

a. The handrail needs to be at least 35 in. above the ramp. Mark the point 35 in. above the top of the ramp. What are its coordinates?

b. What is the equation of the line for the handrail?



13) Find the equation of the line with slope -3, passing through the midpoint of a segment with endpoints (3, 4) and (11, 6).

14) Find the equation of the perpendicular bisector of the segment with endpoints (1,3) and (9,15).

- 15) Line ℓ_1 contains $(-2, 1)$ and $(4, 3)$ and line ℓ_2 contains $(5, 3)$ and $(3, g)$. What value of g makes ℓ_1 and ℓ_2 perpendicular?

Clue: For ℓ_1 and ℓ_2 to be perpendicular, what must be true of their slopes?

Bonus

A classmate plotted the following points: $A(-3, 2)$, $B(-1, 4)$, and $C(1, 2)$. Where should the classmate plot point D so that the quadrilateral formed has perpendicular sides?