

HAP 2.3 Notes and Examples

Lines

Learning Objectives:

1. Calculate and interpret the slope of a line
2. Graph lines given a point and a slope
3. Write equations of lines
4. Identify slope and y-intercept from the equation
5. Graph lines using intercepts

Examples:

1. Determine the slope of the line containing the points $(-5, 4)$ & $(0, 7)$.
2. Graph the line containing the point $(2, 4)$ with slope $m = \frac{-2}{3}$.
3. Write an equation of the line satisfying the given conditions:
 - (a) Slope = $\frac{3}{4}$, containing the point $(-2, 4)$
 - (b) Containing the points $(4, 2)$ & $(3, -4)$
 - (c) x-intercept = 3, y-intercept = -2
 - (d) Vertical line containing $(5, -1)$
 - (e) Parallel to the line $3x - 4y = 5$ and containing the point $(3, -6)$
4. Find the slope and y-intercept of the line $4x - 6y = -3$.
5. Find the intercepts and graph the line $-2x + y = 4$.

Answers: 1. $m = \frac{7 - 4}{0 - (-5)} = \frac{3}{5}$ 2. 3. (a) $y = \frac{3}{4}x + \frac{11}{2}$

3. (b) $y = 6x - 22$ (c) $y = \frac{2}{3}x - 2$ (d) $x = 5$ (e) $y = \frac{3}{4}x - \frac{33}{4}$

4. Slope = $\frac{2}{3}$; y-intercept = $\frac{1}{2}$ 5. x-intercept = -2, y-intercept = 4

