Practice Problems - Lecture 12

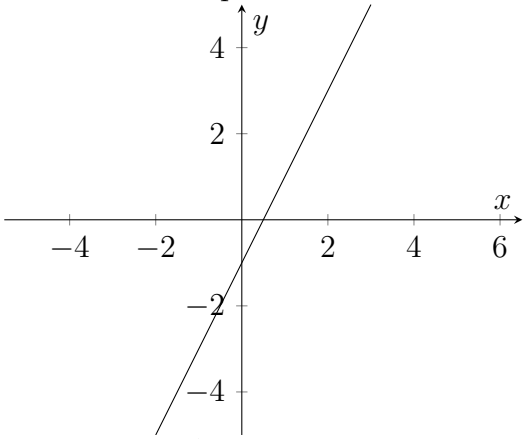
Problem 1. Graph the following lines, and give the domain and range:
(a) $y = -x + 4$;
(b) $y = 3$;
(c) $2x + 5y = 10$;
(d) $x = -4$.

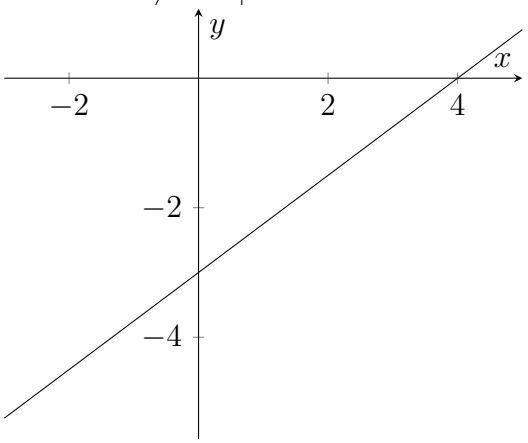
Problem 2. Find the slope of the line through the given points:
(a) $(-3, 4)$ and $(2, -8)$;
(b) $(5, -3)$ and $(1, -7)$;
(c) $(3, 5)$ and $(-2, 5)$;
(d) $(-8, 5)$ and $(-8, 2)$.

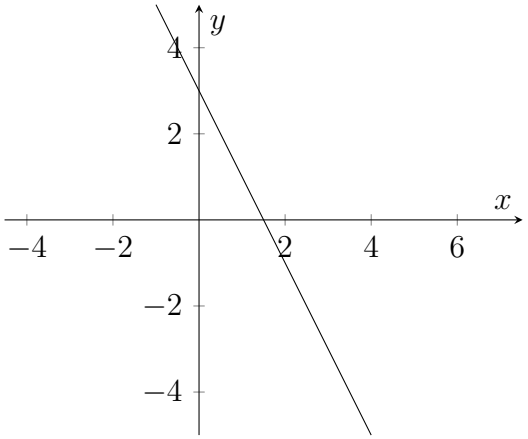
Problem 3. Graph the line passing through the given point and having the indicated slope by plotting three points on the line:
(a) through $(-2, 8)$ with $m = \frac{2}{5}$;
(b) through $(-2, -3)$ with $m = -\frac{3}{4}$.

Problem 4. Write the equation for each line described in standard form:
(a) through $(2, 4)$ with $m = -1$;
(b) through $(5, 1)$ with undefined slope;
(c) through $(-3, 12)$ with $m = 0$;
(d) through $(2, 3)$ and $(-1, 2)$.

Problem 5. Identify the intercepts and the slope of the linear functions shown, and then write an equation for the line in slope-intercept form:







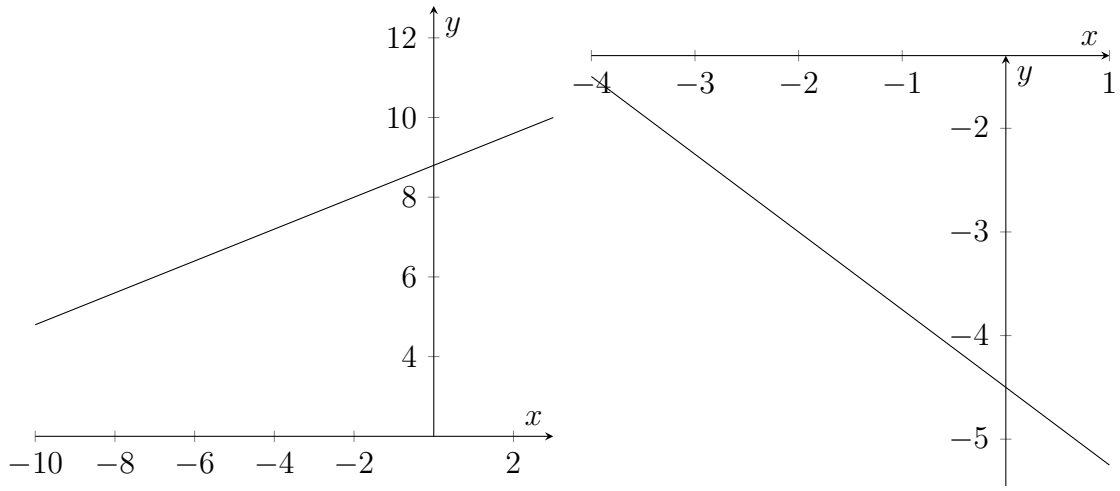
Problem 6. Write an equation in slope-intercept form for the line described:
(a) through $(3, -2)$ and parallel to $2x - y = 5$;
(b) through $(-2, 0)$ and perpendicular to $8x - 3y = 7$;
(c) through $(-4, 4)$ and perpendicular to $x = 4$.

Answers:

1. (a) Domain: $(-\infty, \infty)$, Range: $(-\infty, \infty)$; (b) Domain: $(-\infty, \infty)$, Range: $\{3\}$; (c) Domain: $(-\infty, \infty)$, Range: $(-\infty, \infty)$; (d) Domain: $\{-4\}$, Range: $(-\infty, \infty)$.

2. (a) $-\dfrac{12}{5}$; (b) 1; (c) 0; (d) undefined.

3.



4. (a) $x + y = 6$; (b) $x = 5$; (c) $y = 12$; (d) $x - 3y = -7$.

5. (a) y-intercept: -1, x-intercept: $\frac{1}{2}$, slope 2, $y = 2x - 1$;
(b) y-intercept: -3, x-intercept: 4, slope $\frac{3}{4}$, $y = \dfrac{3}{4}x - 3$;
(c) y-intercept: 3, x-intercept: $\frac{3}{2}$, slope -2, $y = -2x + 3$.

6. (a) $y = 2x - 8$; (b) $y = -\dfrac{3}{8}x - \dfrac{3}{4}$; (c) $y = 4$.

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