

Problem Set 2: Linear Functions

A. Equations and forms

1. Solve each equation.

(a) $3x - 5(2 + x) = x + 3(2x - 1)$

(b) $4x - 3(2 - x) = 2(x + 5) + 9$

2. Convert each equation to the requested form. Use general form $Ax + By + C = 0$.

(a) $3x + 2y - 8 = 0$ to $y = mx + b$.

(b) $4x - 5y + 10 = 0$ to $y = mx + b$.

(c) $y = -2x + 7$ to general form.

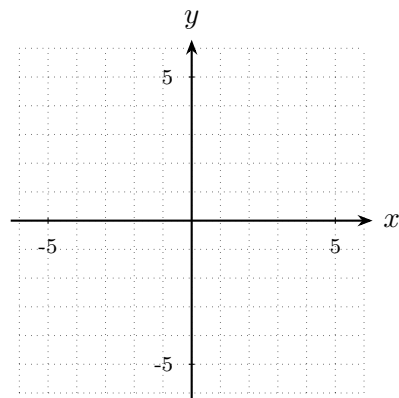
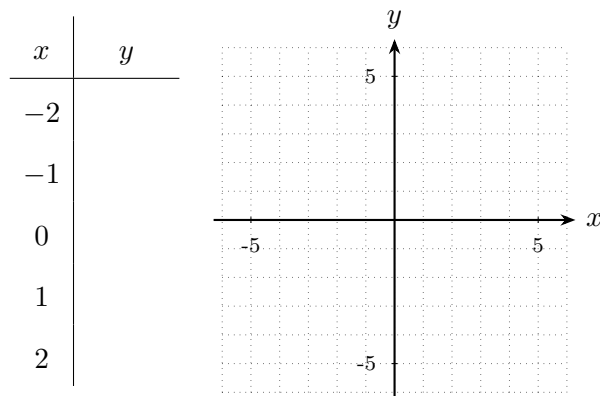
(d) $y = \frac{3}{4}x - 5$ to general form with integer coefficients.

B. Tables and graphs

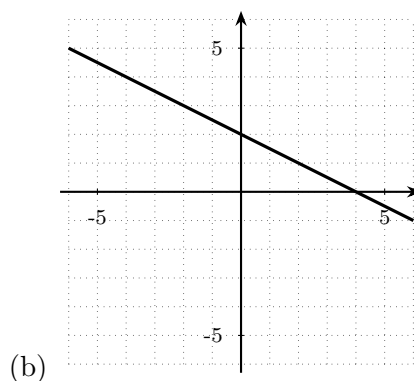
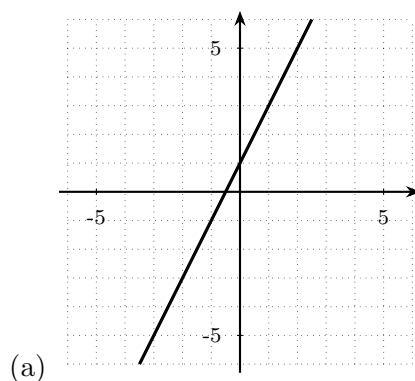
3. For $y = -2x + 3$, complete the table.

x	-3	-2	-1	0	1	2	3
y							

4. (a) For $y = 2x - 1$, complete the table of values and graph the line. (b) Graph $y = -\frac{2}{3}x + 1$ using the y -intercept and slope. Do not use a table of values.



5. Find the equation of each graphed line in the form $y = mx + b$.



C. Intercepts and substitution

The y -intercept occurs where $x = 0$. The x -intercept occurs where $y = 0$.

6. Find both intercepts of each line.

(a) $3x + 2y = 12$

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

7. For $y = 3x - 5$, find x when $y = 10$.

8. For $y = -\frac{1}{2}x + 4$, find x when $y = -2$.

D. Finding equations of lines

Give every final equation in slope-intercept form $y = mx + b$.

9. Find the equation through $(1, 3)$ and $(5, 11)$.
10. Find the equation through $(-2, 5)$ and $(4, 2)$.
11. Find the equation with slope -3 through $(2, 5)$.
12. Find the equation with slope $\frac{2}{3}$ through $(-3, 1)$.
13. Find the line parallel to $y = 4x - 7$ through $(2, 3)$.
14. Find the line perpendicular to $y = -\frac{5}{2}x + 4$ through $(3, -1)$.

Answer Key

1. (a) $x = -\frac{7}{9}$
(b) $x = 5$
2. (a) $y = -\frac{3}{2}x + 4$
(b) $y = \frac{4}{5}x + 2$
(c) $2x + y - 7 = 0$
(d) $3x - 4y - 20 = 0$
3. y -values: 9, 7, 5, 3, 1, -1, -3
4. (a) y -values: -5, -3, -1, 1, 3; graph of $y = 2x - 1$
(b) Graph of $y = -\frac{2}{3}x + 1$
5. (a) $y = 2x + 1$
(b) $y = -\frac{1}{2}x + 2$
6. (a) x -intercept (4, 0); y -intercept (0, 6)
(b) x -intercept (6, 0); y -intercept (0, 4)
7. $x = 5$
8. $x = 12$
9. $y = 2x + 1$
10. $y = -\frac{1}{2}x + 4$
11. $y = -3x + 11$
12. $y = \frac{2}{3}x + 3$
13. $y = 4x - 5$
14. $y = \frac{2}{5}x - \frac{11}{5}$