Example Problems

Find the slope-intercept equation of the line that passes through points.

1. \((-1,3),(2,3)\)
2. \((-2,1),(2,-4)\)

Find the slope of the line, and sketch its graph.

3. \(3x - y = 2\)
4. \(-3x - 4y = 2\)
5. \(y = 3\)
6. \(x = 1\)

Express the quadratic in vertex form.

7. \(f(x) = x^2 - 6x + 7\)
8. \(f(x) = -x^2 + 4x + 6\)

Sketch the graph.

9. \(y = (x + 1)^2 - 1\)
10. \(y = -x^2 - 2x\) (Hint: Complete the square to put this in vertex form.)
11. \(y = \frac{1}{2}x^2 - x + 3\) (Hint: Complete the square to put this in vertex form.)
12. \(y = -(x + 3)^3 - 1\)
13. \(y = 3(x - 2)^3\)
14. \(y = \sqrt{x + 2} - 2\)
15. \(y = \sqrt{2-x} - 1\) (Hint: Factor out the negative under the square root first: \(\sqrt{-(x - 2)}\).)

16. \(f(x) = \begin{cases} x^2 + 2, & \text{if } x < 0 \\ \sqrt{x} - 1, & \text{if } x \geq 0. \end{cases}\)

17. \(f(x) = \begin{cases} 2 - x, & \text{if } x < 2 \\ (x - 2)^3, & \text{if } x \geq 2. \end{cases}\)

*Created by Maria Gommel, June 2014.*
Answers

1. $y = 3$
2. $y = -\frac{5}{4}x - \frac{3}{2}$
3. $m = 3$
4. $m = -\frac{3}{4}$
5. $m = 0$
6. $m$ is undefined
7. $f(x) = (x - 3)^2 - 2$
8. $f(x) = -(x - 2)^2 + 10$