

Graph Transformations, Quadratic and Cubic Graph Features

Year 11 · Algebra · y11-graphs-functions

Name: _____

Date: _____

Class: _____

Score: ____ / ____

Instructions

Answer every question in Practice. Try the Challenge section once Practice is complete. 10 questions in total.

Practice

1. $f(x) = 2x + 3$. What is $f(5)$?

2. The graph $y = (x - 3)^2 + 4$ is a quadratic in turning-point form $y = (x - a)^2 + b$, with turning point (a, b) . What is the y-coordinate of the turning point?

3. The graph $y = f(x) + 3$ is a vertical translation of $y = f(x)$. Does it shift the graph up or down, and by how much?

4. The graph $y = -x^2 + 4$ has a negative x^2 coefficient. Does the parabola open upwards (with a minimum point) or downwards (with a maximum point)?

5. $f(x) = 3x - 4$. What is $f(4)$?

6. $f(x)$ means substitute the given value in place of x everywhere it appears. $f(x) = x^2 - 5$. What is $f(3)$? ($3^2 - 5$)

7. In $y = (x - a)^2 + b$, the turning point is at (a, b) — note the sign inside the bracket flips for the x-coordinate. The graph $y = (x + 2)^2 - 7$ has turning point $(-2, -7)$. What is the y-coordinate of the turning point?

8. $y = f(x) - c$ shifts the graph DOWN by c , while $y = f(x) + c$ shifts it UP by c . Does $y = f(x) - 5$ shift the graph up or down, and by how much?

Challenge

1. $f(x) = 2x^2 - 3$. What is $f(3)$?

2. The graph $y = f(x - 2)$ is a horizontal translation of $y = f(x)$. Does it shift the graph left or right, and by how much?
