# Unit 7 Lesson 23: Comparing Functions

## 1 Math Talk: Evaluating Functions (Warm up)

**Student Task Statement**

Mentally evaluate each of the functions when $x = 3$.
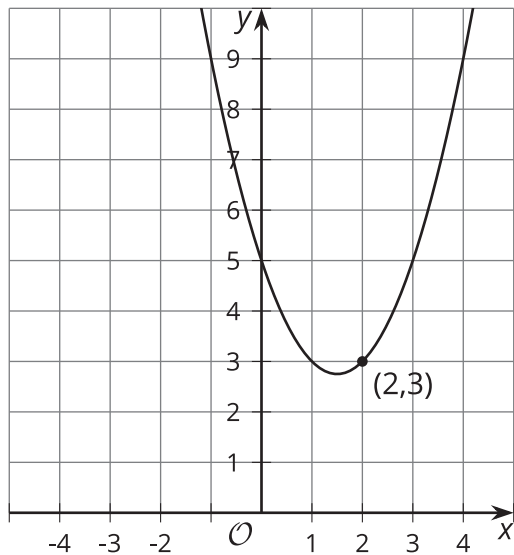
$f(x) = x^2 - 4x + 1$

$g(x) = 6x - 2x^2$

$h(x) = (x - 4)(x - 3)$

$j(x) = 2(x - 1)(x + 2)$

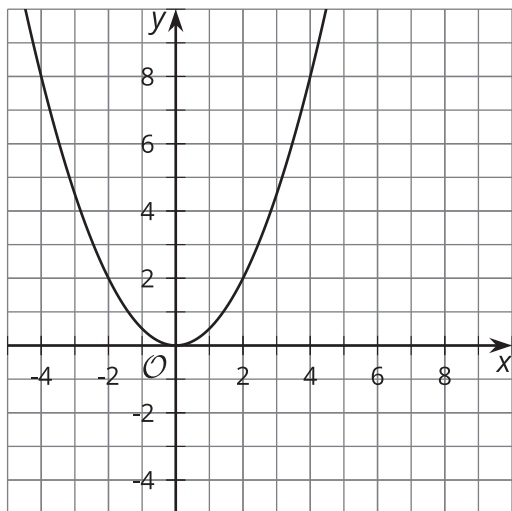# 2 Comparing Functions

**Images for Launch**



**Student Task Statement**

The notation $f(2)$ means the output of function $f$ when $x$ is 2. For each function, determine whether $f(2) > f(3)$, $f(2) < f(3)$, or $f(2) = f(3)$.
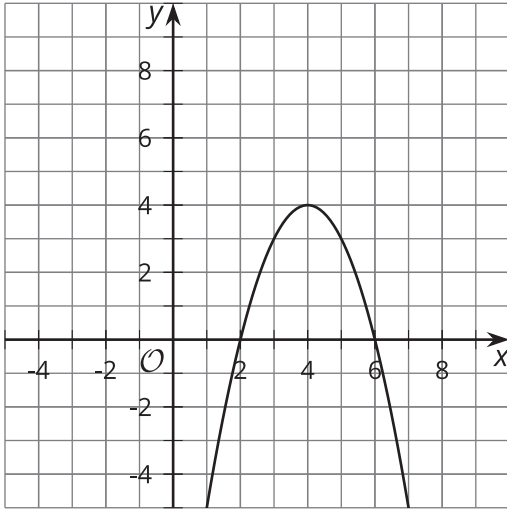
1. $f(x) = x^2 + 2x + 3$
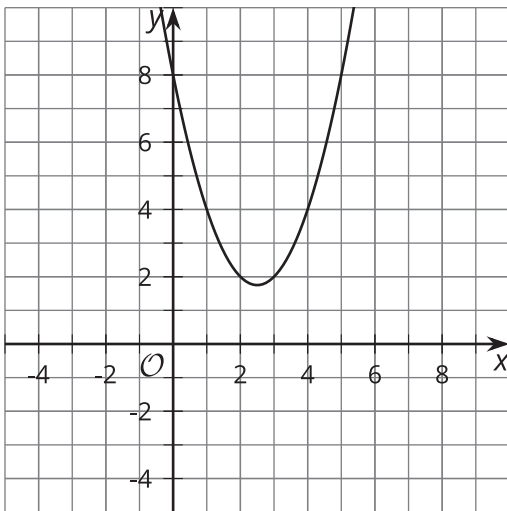
2. $f(x) = (x - 2)(x - 3)$
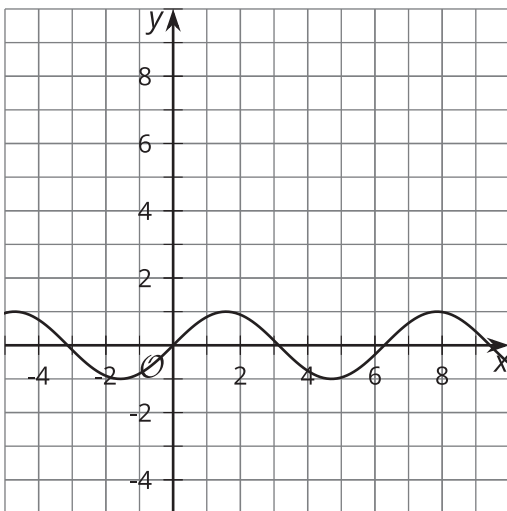
3. $f(x) = -x^2 + 5$



4.

5.



6.



7.

# 3 Finding the Vertex

**Student Task Statement**

Write each function in vertex form, then find the coordinates of the vertex.
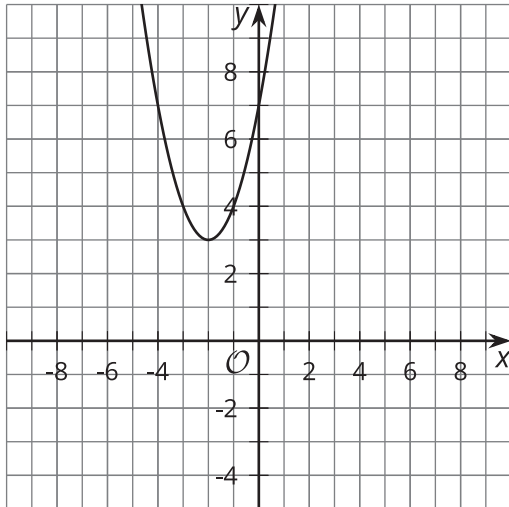
1. $y = x^2 - 4x + 7$

2. $y = (x - 1)(x + 3)$

3. $y = (x - 2)(x + 2)$

4. $y = x^2 - 2x + 1$

5. $y = -x^2 - 2x - 6$

6. $y = 2x^2 - 12x + 22$

7.