## 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. 



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