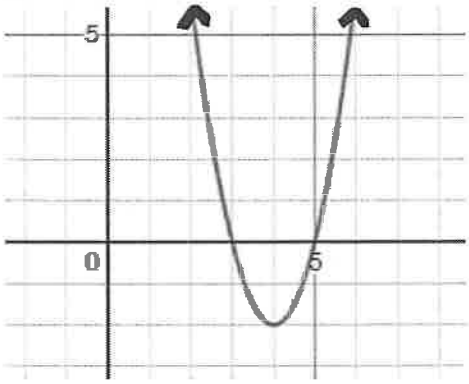
Name_____Date:_____Period:_____

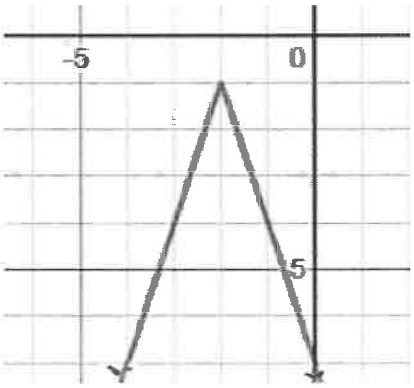
Topic 10 Basic Review

dentify the parent function f(x) of the graphs below. Then, write the transformation(s) that took place from the parent function to the graph below.

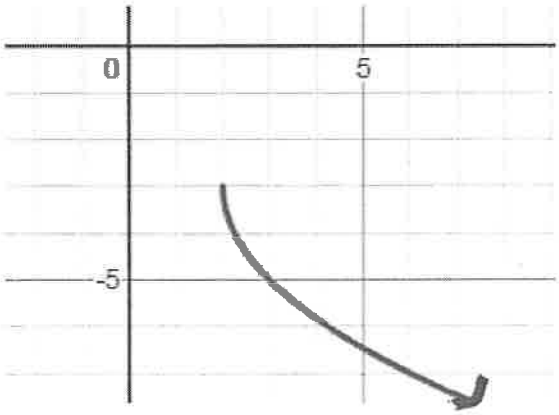
1.



2.



3.



Topic 10 Application Review

State the function, domain/range and transformations for each problem. Show all work.

4. For $f(x) = x^2$, where $f(x)$ = area in cm^2, one side of the square is doubled in length and the adjacent side is decreased by two centimeters.

   Function:

   Domain:

   Range:

   Transformation:

5. You launch a rocket from an initial height of 16ft and an initial velocity of 64ft/second. The following function represents the height of the rocket $h(t) = -16t^2 + bt + c$ where b is the initial velocity and c is the initial height.

   Function:

   Domain:

   Range:

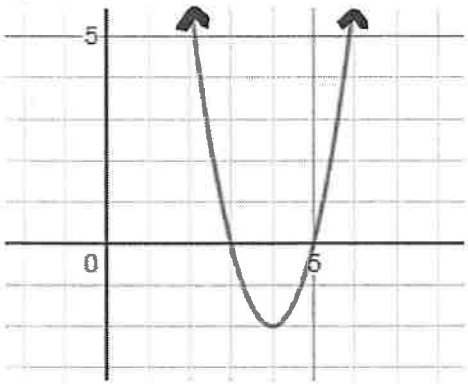
   Transformation:

Name_____Date:_____Period:_____

Topic 10 Basic Review

Identify the parent function f(x) of the graphs below. Then, write the transformation(s) that took place from the parent function to the graph below.

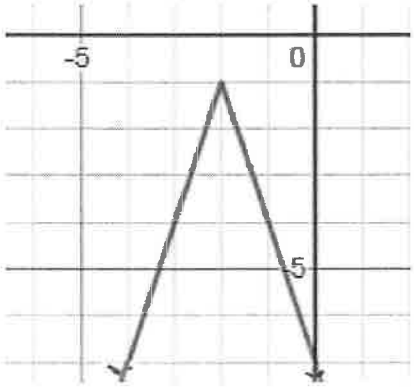
1.



$f(x) = x^2$

- Vertical stretch by a factor of 2
- Translated right 4 and down 2 units

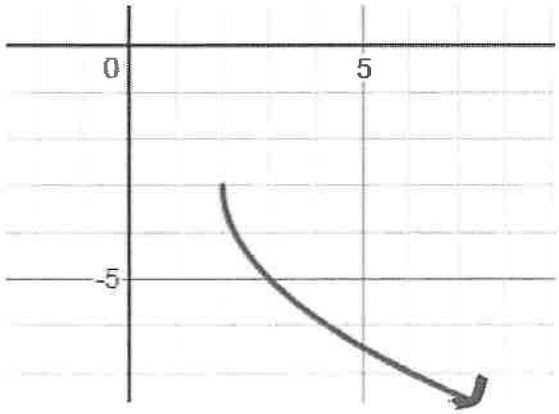
2.



$f(x) = |x|$

- reflected over x axis
- vertical stretch by a factor of 3
- Translate left 2 units & down 1.

3.



$f(x) = \sqrt{x}$

- reflect over x-axis
- vertical stretch by a factor of 2
- Translated right 2 units & down 3

Topic 10 Application Review

State the function, domain/range and transformations for each problem. Show all work.

4. For f(x) = x^2, where f(x) = area in cm^2, one side of the square is doubled in length and the adjacent side is decreased by two centimeters.

x = square side length in cm

Function: $g(x) = (2x)(x-2) \rightarrow g(x) = 2x^2 - 4x$

Domain: $x \geq 0$

Range: $y > 0$

Transformation:

- Vertical stretch by a factor of 2
- Translated right 1 unit & down 2.

$x = \frac{4}{2(2)} = 1$

$g(1) = 2(1)^2 - 4(1)$

$g(1) = -2$

$g(x) = 2(x-1)^2 - 2$

5. You launch a rocket from an initial height of 16ft and an initial velocity of 64ft/second. The following function represents the height of the rocket $h(t) = -16t^2 + bt + c$ where b is the initial velocity and c is the initial height.

Function: $h(t) = -16t^2 + 64t + 16$

Domain: $0 \leq x \leq 4.236$

Range: $0 \leq y \leq 80$

Transformation:

- Reflected over x-axis
- Vertical stretch by a factor of 16
- Translated right 2 units & up 80

$h(t) = -16(t^2 - 4t - 1)$

$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(-1)}}{2(1)}$

$x = \frac{4 \pm \sqrt{20}}{2}$

$x = -0.236, 4.236$

$x = \frac{4}{2(1)} = 2$

$h(2) = -16(2)^2 + 64(2) + 16$

$h(2) = 80$

$h(t) = -16(t-2)^2 + 80$