

# 111's functions 1 Study Guide Control

1. Describe all transformations from the parent function given the function below.

$$f(x) = -4(x+2) - 1$$

- Reflection over x-axis
- Stretch by 4
- left 2
- down 1

2. Describe all transformations from the parent function given the function below.

$$f(x) = \frac{1}{2}(x-3)^2 + 7$$

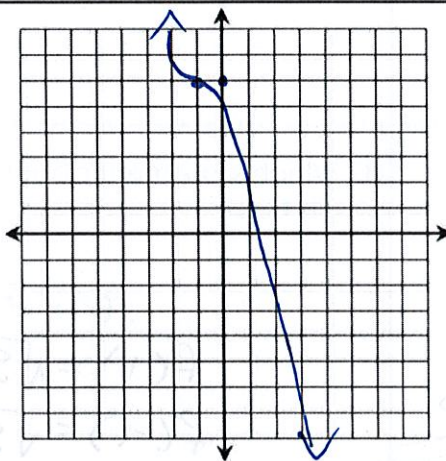
- Shrink (factor of 2)
- Right 3
- Up 7

For questions 3-5, graph each function and identify all key characteristics.

3.  $f(x) = -(x+1)^3 + 6$

- Up 6
- left 1
- reflect ~~across~~

x	y
-3	14
-2	7
-1	6
0	5
1	-2

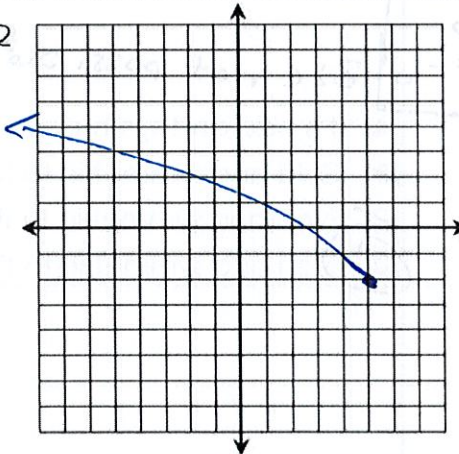


Domain: $\mathbb{R}$	Range: $\mathbb{R}$
x-int(s): $\sqrt[3]{6} - 1$	y-int: 5
Extrema: None	
Increasing Interval(s): None	
Decreasing Interval(s): $(-\infty, \infty)$	
End Behavior: As $x \rightarrow -\infty, y \rightarrow \infty$ As $x \rightarrow \infty, y \rightarrow -\infty$	

4.  $f(x) = \sqrt{-3(x-5)} - 2$

- Down 2
- Right 5
- horiz. stretch
- reflect ~~across~~

x	y
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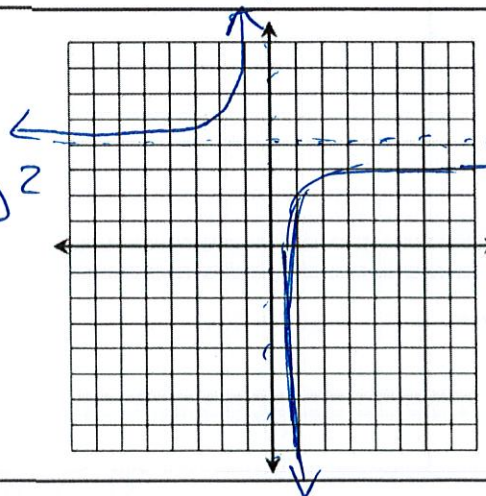


Domain: $(-\infty, 5]$	Range: $[-2, \infty)$
x-int(s): $3^{2/3}$	y-int: 1.873
Extrema: <del>None</del> min: -2	
Increasing Interval(s): None	
Decreasing Interval(s): $(-\infty, 5]$	
End Behavior: As $x \rightarrow \infty, y \rightarrow \infty$ As $x \rightarrow 5, y \rightarrow -2$	

5.  $f(x) = -\frac{2}{x} + 4$

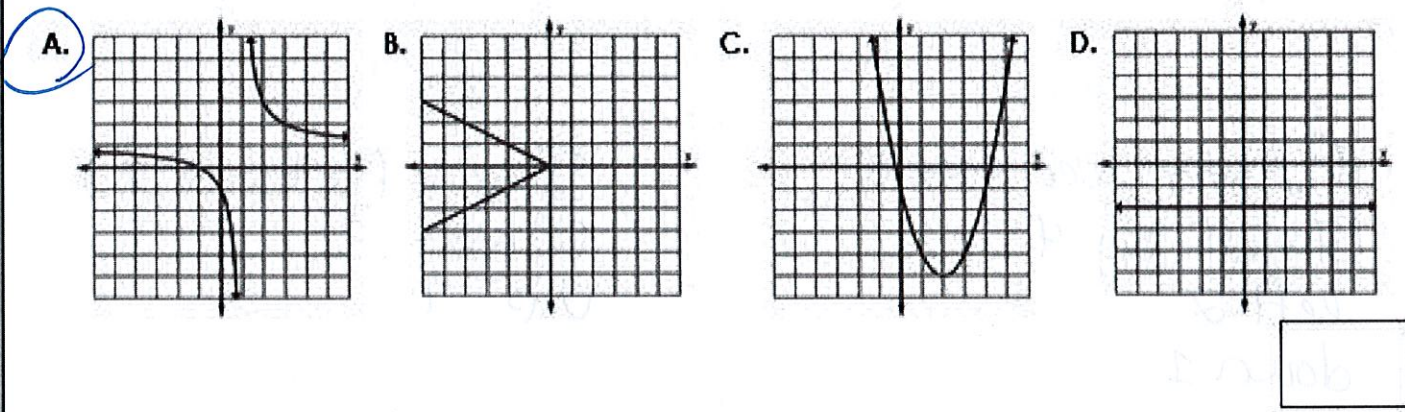
- up 4
- Stretch by 2
- reflect

x	y
-2	
-1	
0	
1	
2	



Domain: $(-\infty, 0) \cup (0, \infty)$	Range: $(-\infty, 4) \cup (4, \infty)$
x-int(s): <del>None</del> $1/2$	y-int: None
Extrema: None	
Increasing Interval(s): $(-\infty, 0), (0, \infty)$	
Decreasing Interval(s): None	
End Behavior: As $x \rightarrow -\infty, y \rightarrow 4$ As $x \rightarrow \infty, y \rightarrow 4$	

6. Which relation below represents a one-to-one function?



7. Determine whether the function below is even, odd, or neither. Prove your answer algebraically.

$$f(x) = -2x^3 + 8x$$

$$f(2) = -2(2)^3 + 8(2) = 0$$

$$f(-2) = -2(-2)^3 + 8(-2) = 0$$

$$f(1) = -2(1)^3 + 8(1) = 6$$

$$f(-1) = -2(-1)^3 + 8(-1) = -6$$

- even
- odd
- neither

8. Which statement about the function below is true?

$$f(x) = \sqrt{-x^2 + 5}$$

$$f(x) = \sqrt{5 - x^2}$$

$$f(1) = \sqrt{5 - 1} = \sqrt{4} = 2$$

$$f(-1) = \sqrt{5 - (-1)^2} = \sqrt{4} = 2$$

- B & C not possible.
- A. It is odd and symmetric to the origin.
  - B. Odd and symmetric to the y-axis.
  - C. Even and symmetric to the origin.
  - D. Even and symmetric to the y-axis.

D

9. Which function is not one-to-one?

A.  $f(x) = -\sqrt{x+4}$

B.  $f(x) = 5 - x^2$

C.  $f(x) = 4x^3 + 1$

D.  $f(x) = -\frac{2}{x} + 7$

B