Name: _____ Date: _____

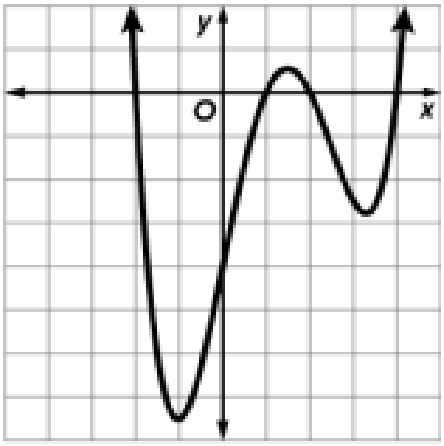
Algebra 2 CPS - Module 1 Summative Assessment - Functions

1) MONEY The table shows the amount of money remaining on a gift card each week after the gift was given.

Week	0	1	2	3	4	5
Amount	$100	$86	$63	$21	$9	$0

The *x*-intercept is _____ and the *y*-intercept is _____.

2) Identify the domain, range, end behavior, and extrema of the function to the right.



Domain: _____

Range:_____

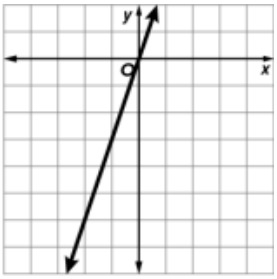
Relative Minimum(s): _____

Relative Maximum(s): _____

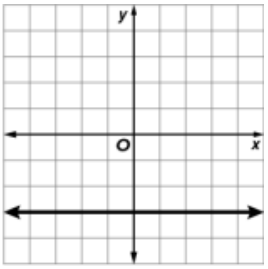
End Behavior: as $x \to -\infty$, $f(x) \to$_____

as $x \to \infty$, $f(x) \to$_____

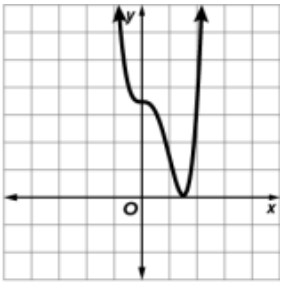
3) For which function(s) is it true that $as\ x \to -\infty,\ f(x) \to -\infty$? Check **all** that apply.



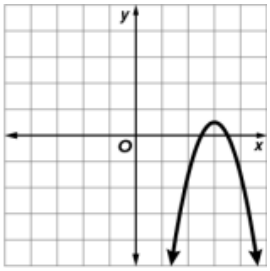
❑ *f*(*x*)



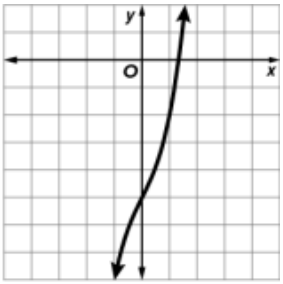
❑ *g*(*x*)



❑ *h*(*x*)



❑ *j*(*x*)



❑ *k*(*x*)

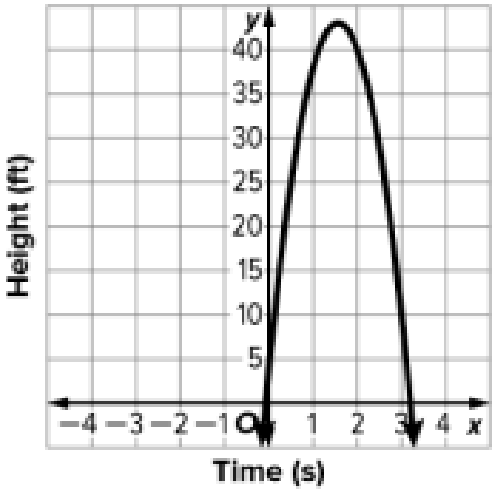
4) PROJECTILE Martin threw a ball from a height of 4 feet, at a speed of 50 feet per second.

Does the end behavior make sense? _____

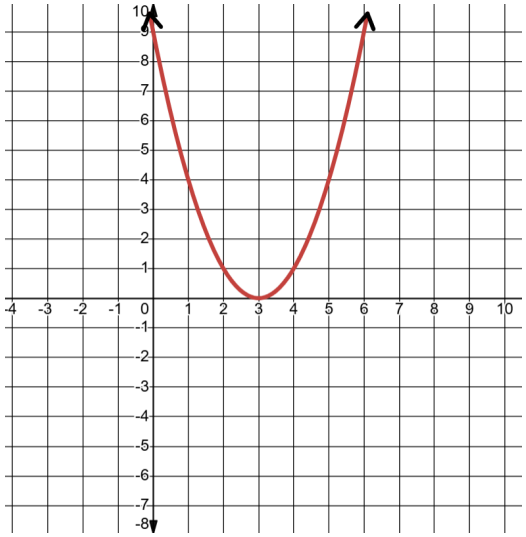
Explain why or why not: _____

_____

_____



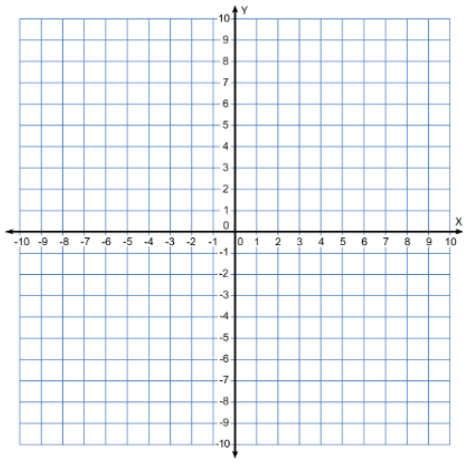
5) Use the description and graph to compare the two functions.

f(x)	***g(x)***
Nonlinear increasing when $x > 3$ x-intercepts at $(-3, 0)$ and $(9, 0)$ minimum at $(3, -6)$ End behavior: as $x \to -\infty$, $f(x) \to \infty$ And as $x \to \infty$, $f(x) \to \infty$	
Circle your answer: ***f(x)*** ***or*** ***g(x)*** has the lesser minimum. Explain:	

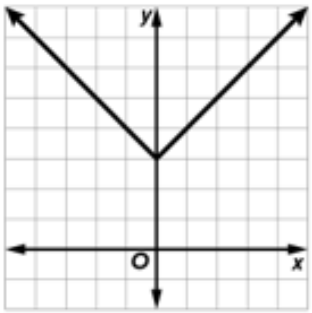
6) Use these key features to sketch the graph of *f(x)*:

- ★ Quadratic
- ★ Minimum at (5,-2)
- ★ *y*-intercept located at (0, 6)
- ★ *x*-intercepts located at (3, 0) and (7,0)
- ★ End behavior: $as\ x \to -\ \infty,\ f(x) \to \infty$

  $as\ x \to \infty,\ f(x) \to \infty$



7) Write the equation of the transformed parent function $y = |x|$ shown to the right. Remember the form $y = a|x - h| + k$



f(*x*) = _____

8) ARCHERY The path of an arrow can be modeled by $h(x) = -\frac{4}{9}x^2 + 4$ where *x* is distance and *h(x)* is the height, both in feet. Describe the transformations from the parent function $y = x^2$.

9) Correctly describe each function's transformation from its parent function.

a. $g(x) = \frac{1}{2}x^2$ _____

b. $f(x) = |x + 7| - 5$ _____

c. $y = -3(x - 2)^2$ _____