

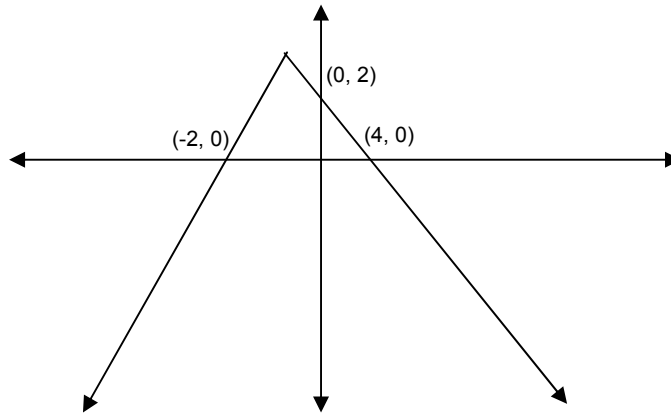
## Answers for Exam 1 Review

1. a.  $(-\infty, -3) \cup (3, \infty)$
- b.  $(-\infty, \infty)$
- c.  $(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$
- d.  $(-\infty, -5) \cup [-4, 4]$

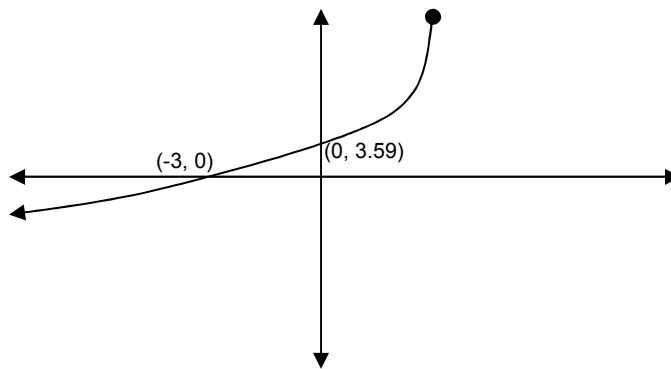
2. a. 
$$\frac{-2}{\sqrt{1-2x-2h} + \sqrt{1-2x}}$$

- b. 
$$\frac{-2}{(1-2x-2h)(1-2x)}$$

3. a. Parent function:  $|x|$   
Shift to the right one unit, Reflect about the x-axis, Shift graph up three units



- b. Parent function:  
Reflect about x-axis, Shift to the right one unit, Reflect about x-axis, Shift graph up five units



4.  $f^{-1}(x) = \frac{x+3}{x-1}$

Check:

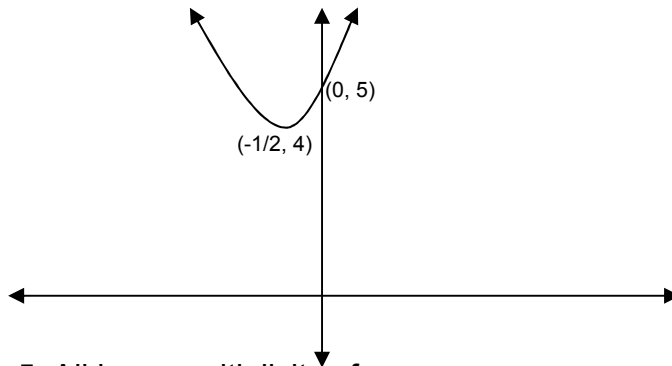
$$f(f^{-1}(x)) = \frac{2\left(\frac{x+3}{x-2}\right)+3}{\left(\frac{x+3}{x-2}\right)-1} = \frac{2\left(\frac{x+3}{x-2}\right)+3}{\left(\frac{x+3}{x-2}\right)-1} \cdot \frac{x-2}{x-2} = \frac{2(x+3)+3(x-2)}{x+3-x+2} = \frac{2x+6+3x-6}{5} = \frac{5x}{5} = x$$

5. a. odd function, origin symmetry  
 b. even function, y-axis symmetry  
 c. odd function, origin symmetry

6. a.  $4(x + \frac{1}{2})^2 + 4$

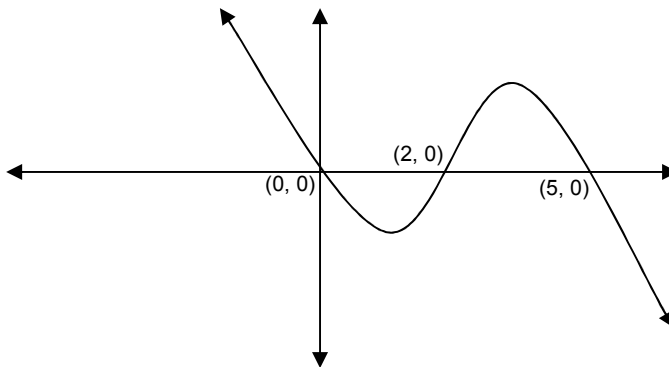
b.  $(-1/2, 4)$ ; The vertex is a minimum because coefficient in front of  $x^2$  is greater than zero.

c.



7. Zeros: 0, 2, 5; All have multiplicity of one

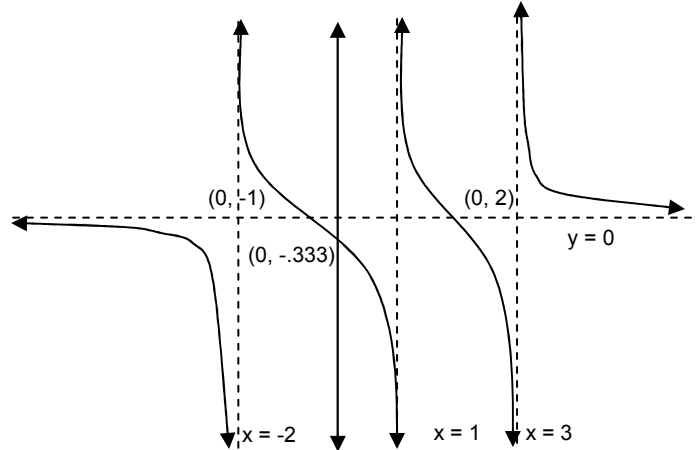
End behavior:  $x \rightarrow \infty, f(x) \rightarrow -\infty$  and  $x \rightarrow -\infty, f(x) \rightarrow \infty$



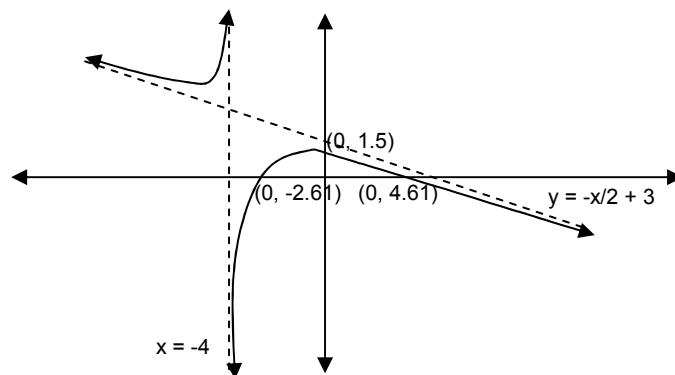
8.  $3x^2 - 12x + \frac{12x+18}{2x^2-1}$

9. Real zeros:  $-1, 2, -3, -3/2$

10. a. Domain:  $(-\infty, -2) \cup (-2, 1) \cup (1, \infty)$   
 Vertical asymptotes:  $x = 1, -2, 3$ ; Horizontal asymptote:  $y = 0$   
 y-intercept:  $(0, -1/3)$ ; x-intercept(s):  $(-1, 0), (2, 0)$



- b. Domain:  $(-\infty, -4) \cup (-4, \infty)$   
 Vertical asymptotes:  $x = -4$ ;  
 Horizontal asymptote: None, Slant asymptote at  $y = -x/2 + 3$   
 y-intercept:  $(0, 3/2)$ ; x-intercept(s):  $(-2.61, 0), (4.61, 0)$



\*Note: The graphs on this page are not drawn to scale and decimal answers are rounded.

If you feel that there are errors with this answer page, please email Brian Beck-Smith at [bbeck@utdallas.edu](mailto:bbeck@utdallas.edu).