Name:_____

MATH 3 Final Review UNIT 1: Parent Functions and Transformations

1. Explain what it means for a relation to be a function.

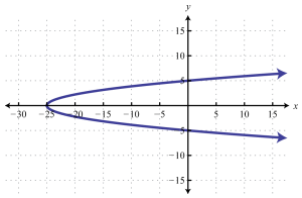
Explain whether the following relations are functions or not.

2.

x	-1	0	2	-1	4
y	3	6	7	3	8

3. $\{(1,4),(3,6),(5,7),(3,9),8,10)\}$

4.



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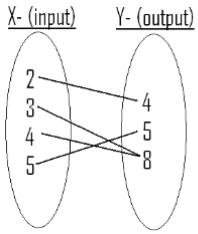

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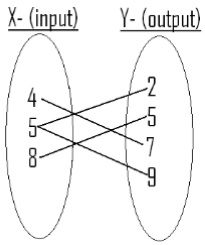

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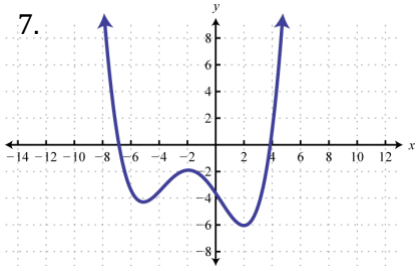
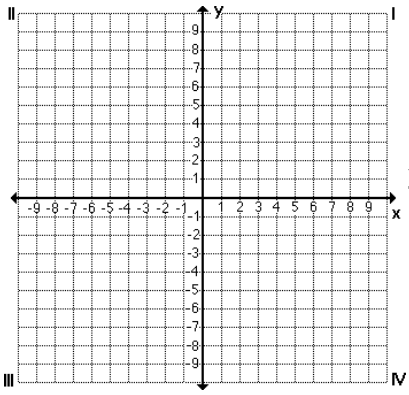


8. Write an equation giving the area, A, of a square as a function of the length of a side, s. Explain how you know that A is a function of s.

9. Consider the function $f(x)$. Describe in words what the transformation $-3f(x+4)-8$ does to the function $f(x)$.

Graph each function and identify the key characteristics listed.

10. $f(x) = 2(x-1)^2 + 1$



Domain:

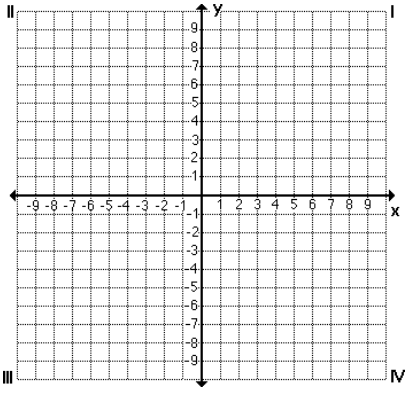
Range:

y-intercept:

End Behavior:

Intervals of increase/decrease:

11. $f(x) = \frac{1}{2}x^3 - 3$



Domain:

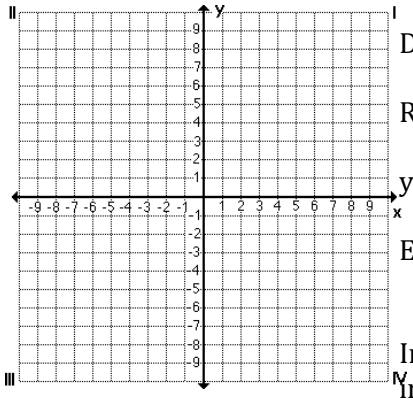
Range:

y-intercept:

End Behavior:

Intervals of increase/decrease:

12. $f(x) = \sqrt{x+3} - 2$



Domain:

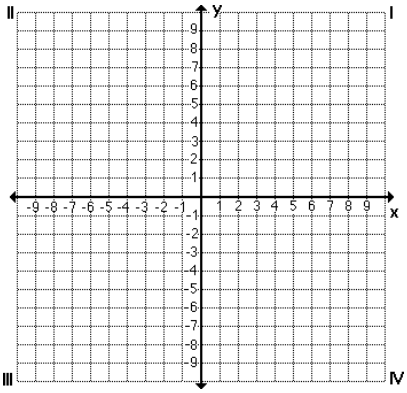
Range:

y-intercept:

End Behavior:

Intervals of increase/decrease:

13. $f(x) = -|x| + 4$



Domain:

Range:

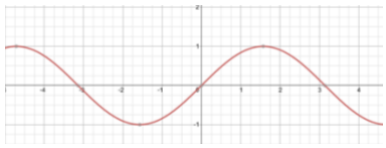
y-intercept:

End Behavior:

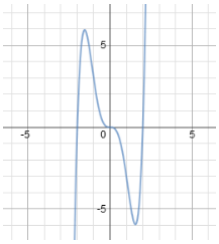
Intervals of increase/decrease:

Determine if each function is even, odd, or neither. Explain or show work.

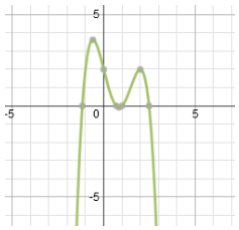
14.



15.



16.



17. $h(x) = 2x - 4$

18. $f(x) = -x^4 + 2x^2 - 3$

19. $t(x) = \frac{5}{x}$

Write the equation of the function that fits the description:

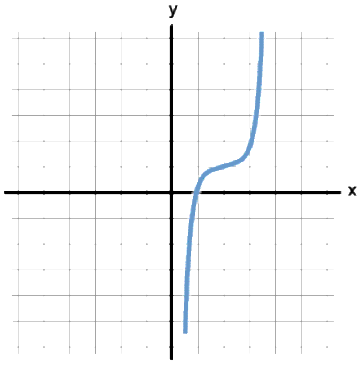
20. Quadratic, vertical stretch by $\frac{1}{2}$, shifted right 3 and down 6

21. Absolute value, flipped over the x axis, shifted down 5

22. Cubic, End Behavior: as $x \to +\infty, f(x) \to -\infty$, as $x \to -\infty, f(x) \to +\infty$, y-intercept at $(0, -7)$

23. Quadratic, Range: $[-2, +\infty)$

24. Sketch the inverse of the graph shown below on the same coordinate plane:



25. Find the average rate of change on the interval $[-2, 4]$ for the function $f(x) = 2x^2 + 3$.