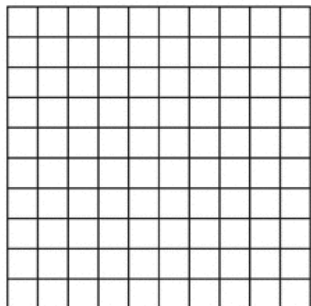


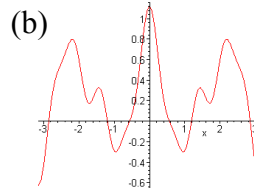
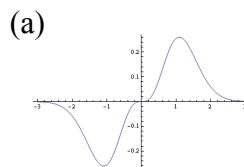
**Aim: How do we perform transformations on functions?**

**I. Do Now:**

1. Graph  $f(x) = [x + 2]$



2. State whether each function is odd, even, or neither. Use your graphing calculator to graph (c) through (f).



(c)  $f(x) = \sqrt[3]{x}$

(d)  $f(x) = x + \sqrt[3]{x}$

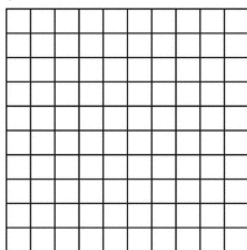
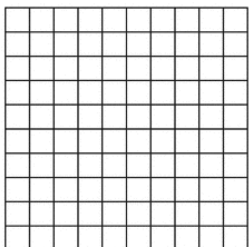
(e)  $f(x) = \frac{1}{x}$

(f)  $f(x) = \frac{1}{x^2}$

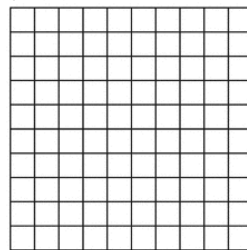
**II. Investigation of Graphs**

3. Graph and label the equations below. Each equation is a transformation of  $f(x) = x^2$ . Describe each transformation.

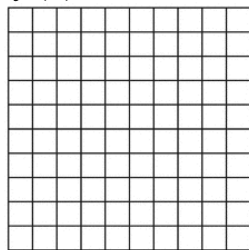
(a)  $f(x) = x^2 + 2$



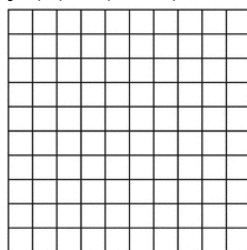
(b)  $f(x) = x^2 - 3$



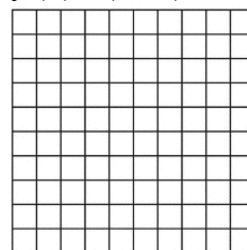
(c)  $f(x) = -x^2$



(d)  $f(x) = (x + 2)^2$



(e)  $f(x) = (x - 3)^2$

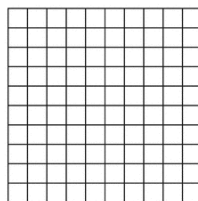


**III. Analysis.** Given the graph of a function  $f(x)$ , describe the following transformations (if  $k > 0$ ):

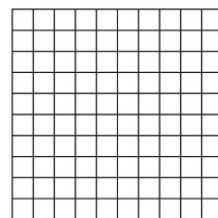
$f(x) + k$ : \_\_\_\_\_       $f(x + k)$ : \_\_\_\_\_       $-f(x)$ : \_\_\_\_\_  
 $f(x) - k$ : \_\_\_\_\_       $f(x - k)$ : \_\_\_\_\_       $f(-x)$ : \_\_\_\_\_

**IV. Applications.**

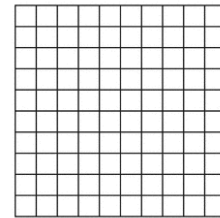
4. Graph the function  $f(x) = \sqrt{x}$ . Use your graph to quickly graph the following transformations:



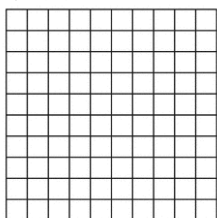
(a)  $f(x) = \sqrt{x} + 3$



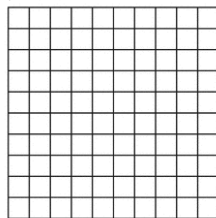
(b)  $f(x) = \sqrt{x} - 2$



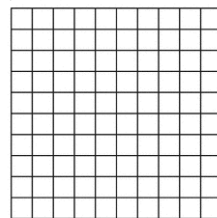
(c)  $f(x) = -\sqrt{x}$



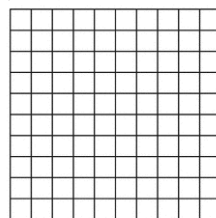
(d)  $f(x) = \sqrt{x - 2}$



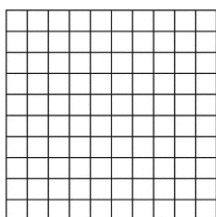
(e)  $f(x) = \sqrt{x + 4}$



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



5. Graph  $f(x) = (x - 3)^2 - 4$



**HW18**  
 Read pages 41 – 45.  
 p. 47: 20abcde, 23, 26, 28, 31, 32, 34, 35, 36  
 p. 38 – 39: 73, 80, 81, 82, 83