

# P.S. #12.4b - Review of Transformations of Functions and Systems of Equations

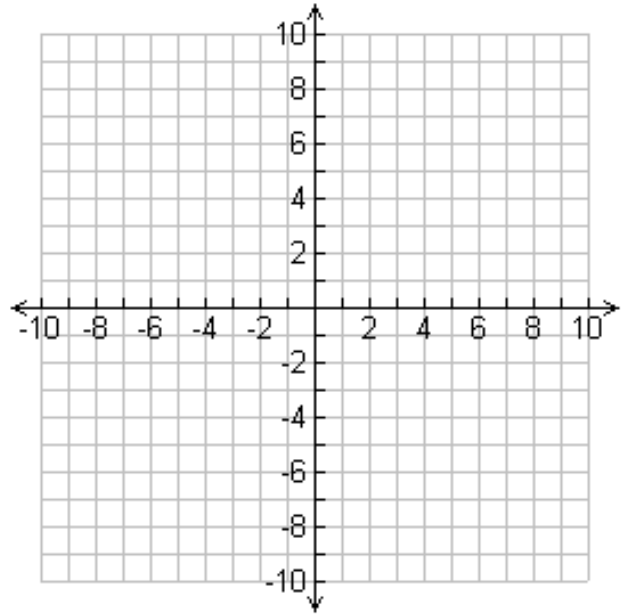
Name: \_\_\_\_\_ Class: \_\_\_\_\_

Graph the piecewise functions below.

$$1.) f(x) = \begin{cases} x+2 & x < -1 \\ x^2 & -1 \leq x < 2 \\ 3 & 2 \leq x \end{cases}$$

Find  $f(-1) =$  \_\_\_\_\_

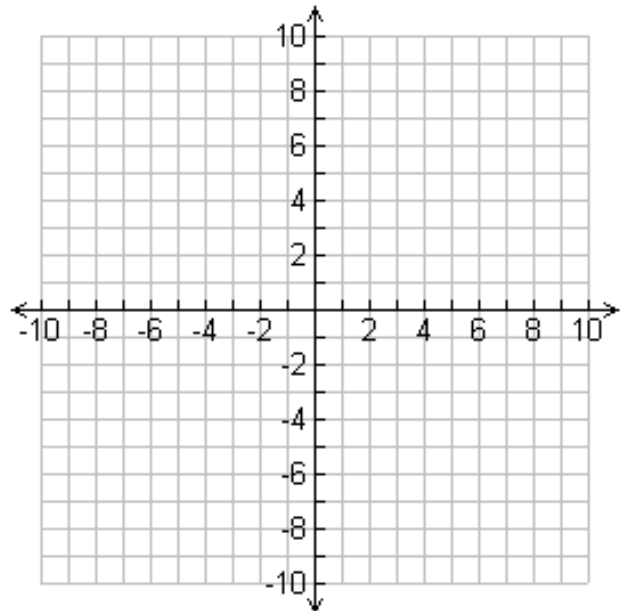
Find  $f(7) =$  \_\_\_\_\_



$$2.) f(x) = \begin{cases} x^2 - 3 & x < 2 \\ x - 7 & x \geq 2 \end{cases}$$

Find  $f(-5) =$  \_\_\_\_\_

Find  $f(2) =$  \_\_\_\_\_



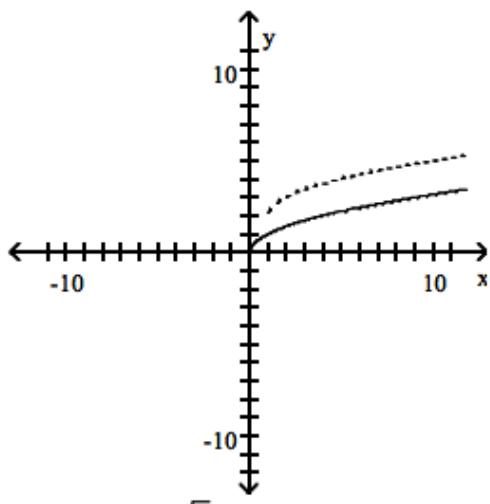
For 3 – 4, rewrite each quadratic function in vertex form. Identify the vertex and state if it is a minimum or a maximum.

$$3.) f(x) = 2x^2 + 36x + 170$$

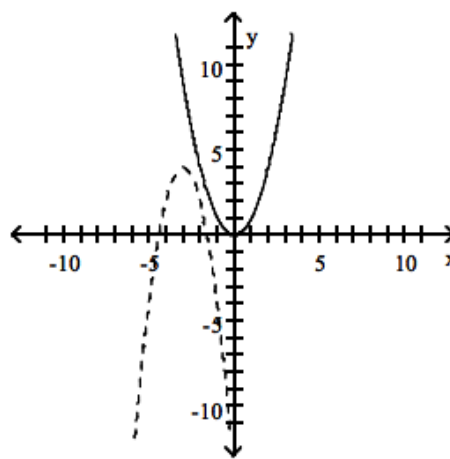
$$4.) g(x) = -\frac{2}{3}x^2 + 9x + 1$$

For 5 – 6: Find the equations of the parent function,  $f(x)$ , (solid) and the transformed function,  $g(x)$  (dotted).

5.)  $f(x) = \underline{\hspace{2cm}}$   $g(x) = \underline{\hspace{2cm}}$



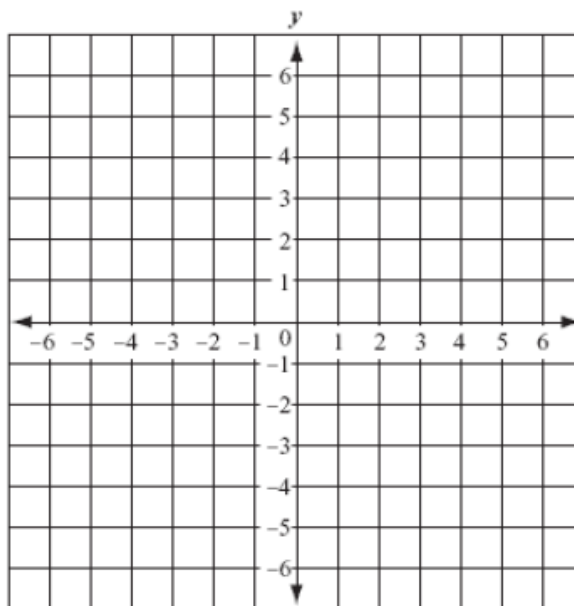
6.)  $f(x) = \underline{\hspace{2cm}}$   $g(x) = \underline{\hspace{2cm}}$



7 – 10: For each graph, you must first graph the parent function. Then, identify the transformations. Finally, complete the graph transformation.

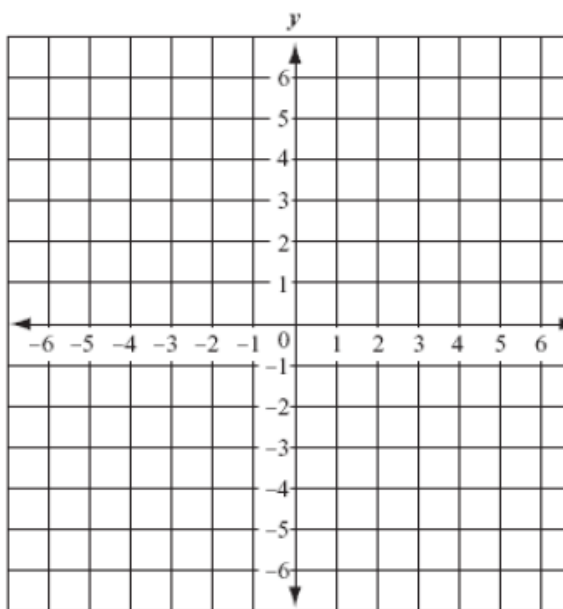
7.)  $f(x) = -|x| + 4$

Transformations:



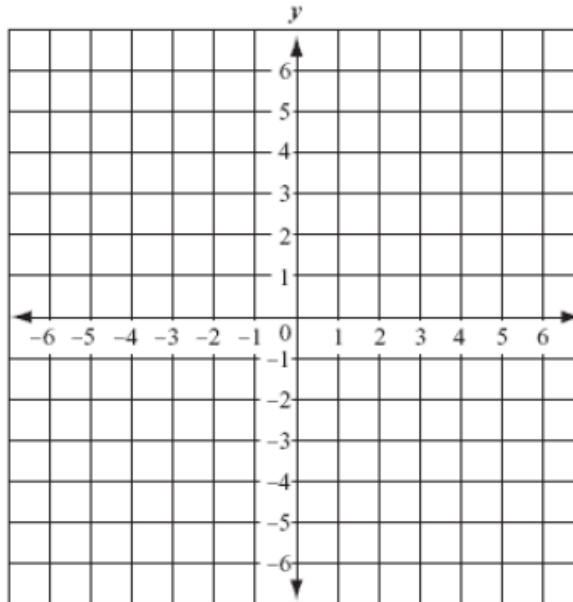
8.)  $f(x) = (x - 5)^2 + 2$

Transformations:



9.)  $f(x) = -3\sqrt{x+1} + 2$

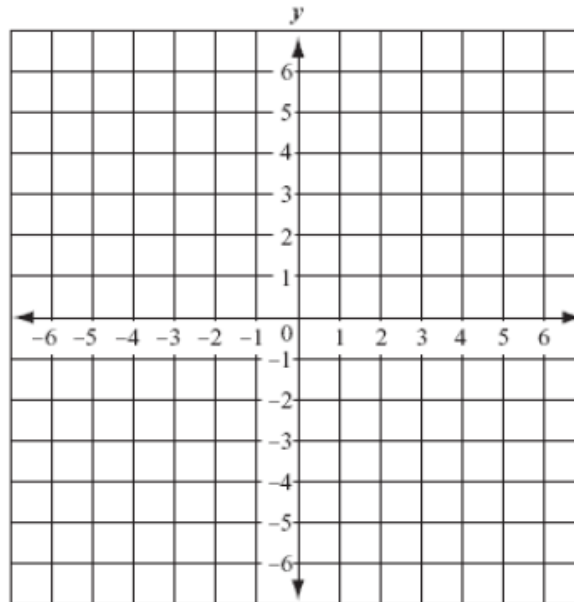
Transformations:



10.)  $f(x) = -2x^2 - 20x - 51$

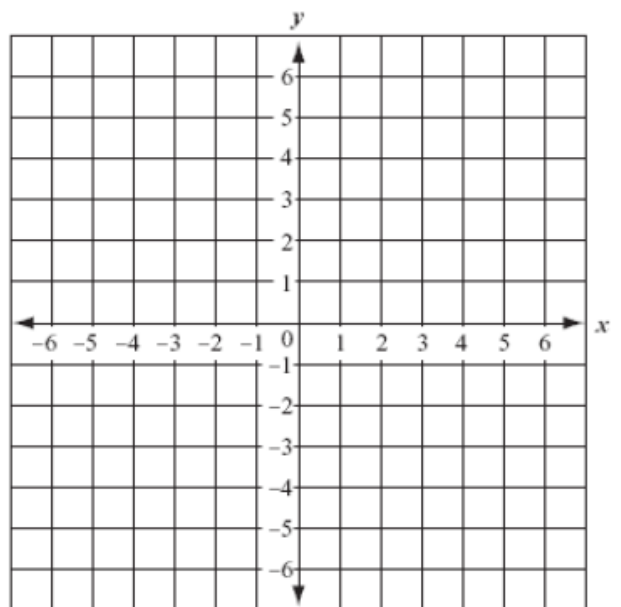
**Put the equation in vertex form, first.**

Transformations:



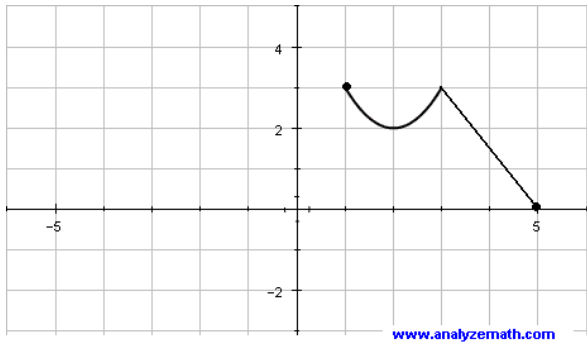
11.) Graph the following quadratic function by finding the axis of symmetry and creating a table of values.

$$h(x) = \frac{1}{4}x^2 + 2x + 7$$

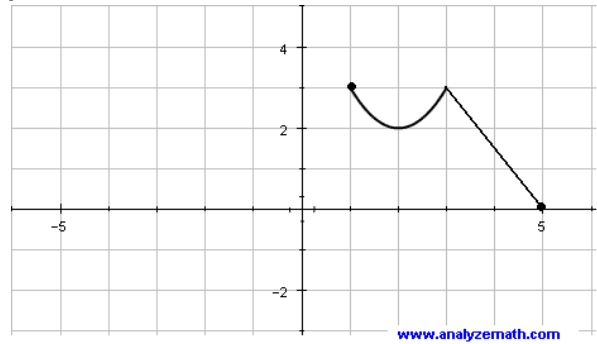


12 – 15: Given the original function,  $f(x)$ , graph the following functions after the given transformations.

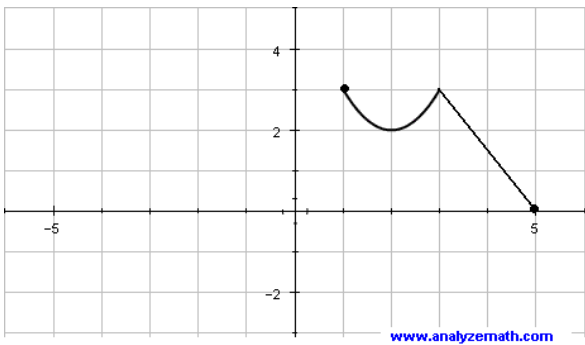
12.)  $g(x) = f(x) + 2$



13.)  $h(x) = f(x + 6)$

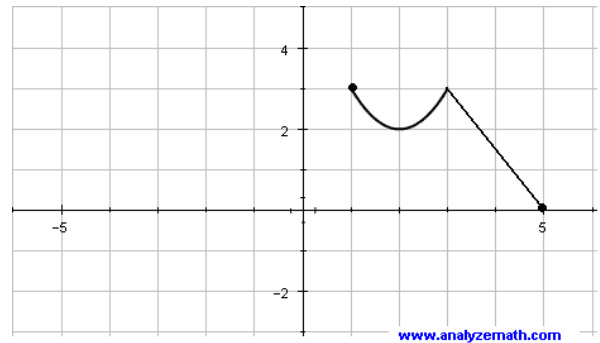


14.)  $j(x) = \frac{1}{2}f(x)$



15.)  $m(x) = f(2x)$

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16.) Solve the following system of equations graphically.

$$y = x^2 - x - 6$$

$$y = x + 2$$

