

Transforming Functions take 2

1. Suppose f is a function and $a > 0$. Define functions v and w by

$$v(x) = f(x) + a \quad \text{and} \quad w(x) = f(x + b) - a.$$

Complete the following sentence:

The graph of v is obtained by shifting the graph of f ... The graph of w is obtained

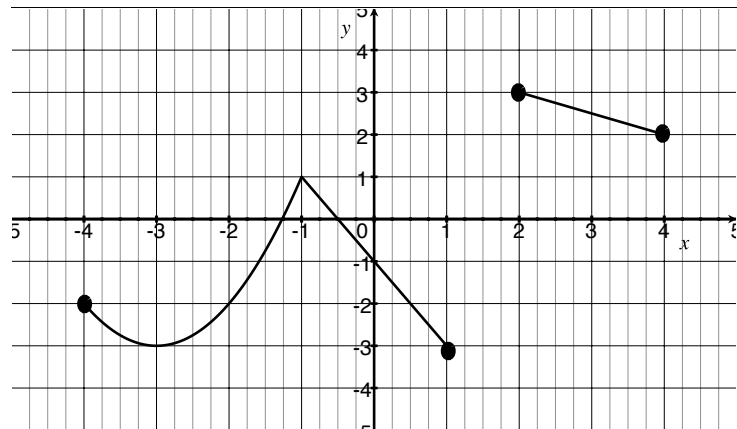
by shifting the graph of f ...

2. The graph of a piece-wise defined function labeled g is below. To be explicit, all the pieces of the graph below make up the graph of g . Note that although the graph of g is disconnected, g passes the vertical line test so it *is* a function.

- (a) Find the range of g .

- (b) Estimate the value(s) of x does $g(x) = -1$?

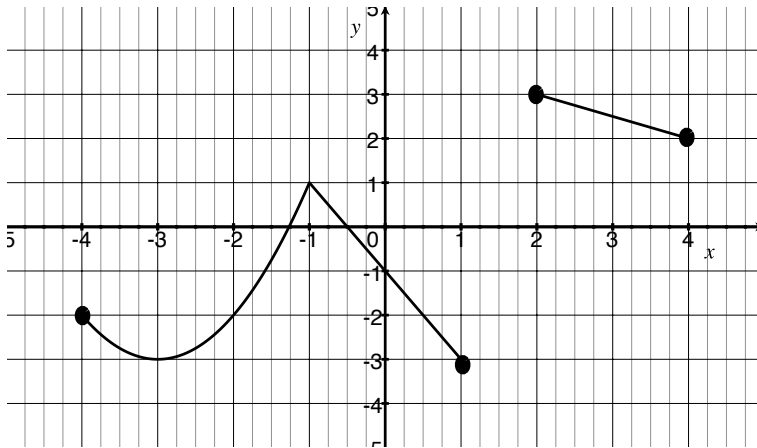
- (c) Draw the graph of $m(x) = g(x - 1) + 2$ on the set of axes.



- (d) The graph of g is comprised of two line segments and a parabola that has been shifted. Write the rule of g in the form indicated below

$$g(x) = \begin{cases} & \text{if } -4 \leq x \leq -1 \\ & \text{if } -1 < x \leq 1 \\ & \text{if } 2 \leq x \leq 4 \end{cases}$$

3. Let g again be the piece-wise defined function graphed below.



(a) Identify the steps to transform the graph of g into the graph of $\alpha(x) = \frac{1}{2}g(x)$ and then graph α .

(b) Identify the steps to transform the graph of g into the graph of $\beta(x) = \frac{1}{2}g(x) + 1$ and then graph β .