

STATIONS ACTIVITY: TRANSFORMATIONS OF FUNCTIONS

Name: _____

1. Consider the function:

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

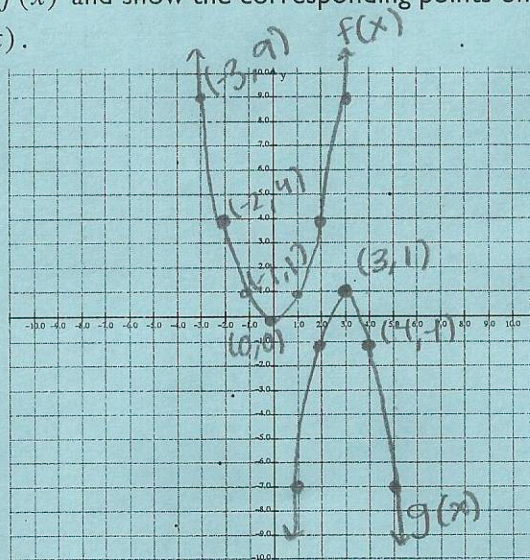
- Vertex: $(0, 0)$
- y-intercept: $(0, 0)$
- Domain: $(-\infty, \infty)$
- Range: $[0, \infty)$

Describe how to transform the graph of $f(x) = x^2$ into

$$g(x) = -2(x-3)^2 + 1$$

- reflect across the x-axis
- vertical stretch by a factor of 2
- translate right 3 units
- translate up 1 unit

Graph $f(x)$ and $g(x)$. Label at least 3 key points on $f(x)$ and show the corresponding points on $g(x)$.



Now describe $g(x)$:

- Vertex: $(3, 1)$
- y-intercept: $(0, -17)$
→ plug in $x=0$
- Domain: $(-\infty, \infty)$
- Range: $(-\infty, 1]$

2. Consider the function:

$$f(x) = |x|$$

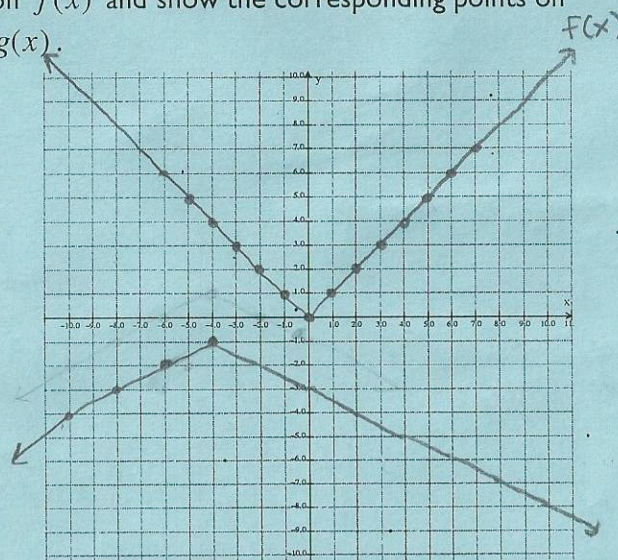
- Vertex: $(0, 0)$
- y-intercept: $(0, 0)$
- Domain: $(-\infty, \infty)$
- Range: $[0, \infty)$

Describe how to transform the graph of $f(x) = |x|$ into

$$g(x) = -\frac{1}{2}|x+4| - 1$$

- reflect across the x-axis
- vertical stretch by a factor of $\frac{1}{2}$
- translate left 4 units
- translate down 1 unit.

Graph $f(x)$ and $g(x)$. Label at least 3 key points on $f(x)$ and show the corresponding points on $g(x)$.



Now describe $g(x)$:

- Vertex: $(-4, -1)$
- y-intercept: $(0, -3)$
- Domain: $(-\infty, \infty)$
- Range: $(-\infty, -1]$