

Let $f(x)=(x+1)^2$ and $g(x)= -3f(-x) + 8$

Complete the table of values for $g(x)$ which is a transformation of $f(x)$.

What this represents is transforming the function $f(x)$ by doing both an x-axis and y-axis reflection, making it 3 times taller, moving it 8 up.

Steps to take:

- Find the opposite of x
- Find substitute this into $f(x)$
- Take this result multiply by -3
- Take this result and add 8

x	$g(x)$
-2	-19
-1	-4
0	5
1	8

x	$-x$	$f(-x) = (-x+1)^2$	$g(x) = -3f(-x) + 8$
-2	2	$(2+1)^2 = 9$	$-3(9)+8 = -19$
-1	1	$(1+1)^2 = 4$	$-3(4)+8 = -4$
0	0	$(0+1)^2 = 1$	$-3(1)+8 = 5$
1	-1	$(-1+1)^2 = 0$	$-3(0)+8 = 8$

Let $f(x)=|x|$ and $g(x)= 5f(x-3) - 7$

Complete the table of values for $g(x)$ which is a transformation of $f(x)$.

What this represents is transforming the function $f(x)$ by making it 5 times taller, moving it 3 right and 7 down.

Steps to take:

- Find $x-3$
- Find substitute this into $f(x)$
- Take this result multiply by 5
- Take this result and subtract 7

x	$g(x)$
-2	18
-1	13
0	8
1	3

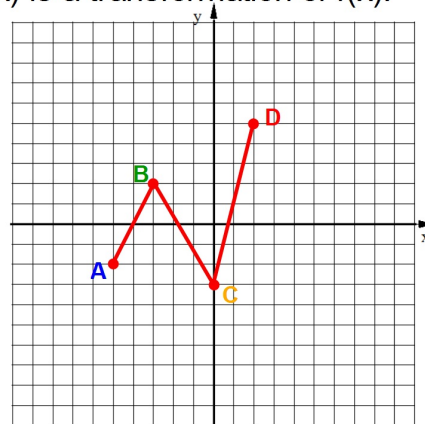
x	$x-3$	$f(x-3) = x-3 $	$g(x) = 5f(x-3) - 7$
-2	-5	$ -5 =5$	$5(5)-7 = 18$
-1	-4	$ -4 =4$	$5(4)-7 = 13$
0	-3	$ -3 =3$	$5(3)-7 = 8$
1	-2	$ -2 =2$	$5(2)-7 = 3$

The graph of $f(x)$ is shown. $g(x)$ is a transformation of $f(x)$.

Graph $g(x)$ if:

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

There are numerous ways to find the graph of $g(x)$. Two methods are shown on the following two pages.



The graph of $f(x)$ is shown. $g(x)$ is a transformation of $f(x)$.

Graph $g(x)$ if:

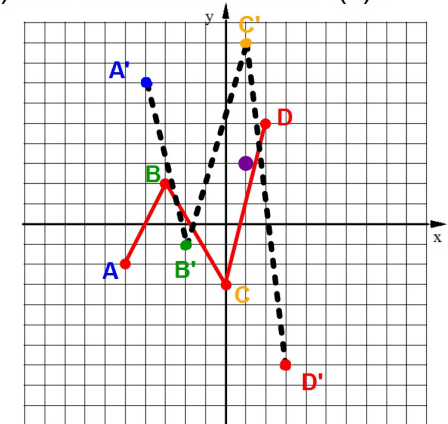
$$g(x) = -2f(x - 1)+3$$

steps:

1. Find "new origin" by translating current origin 1 right and 3 up.
2. Locate points A', B', C', and D' by finding distance from original origin and making the vertical distances twice as much but in the other direction and replot from the "new origin"

$$\begin{aligned} A \text{ } -2 \sqrt{5} &\Rightarrow A' \text{ } 4 \sqrt{5} \\ B \text{ } 2 \sqrt{3} &\Rightarrow B' \text{ } -4 \sqrt{3} \\ C \text{ } \downarrow -3 &\Rightarrow C' \text{ } \uparrow 6 \end{aligned}$$

$$D \text{ } \frac{1}{2} \sqrt{5} \Rightarrow D' \text{ } \frac{1}{2} \sqrt{-10}$$



The graph of $f(x)$ is shown. $g(x)$ is a transformation of $f(x)$.

Graph $g(x)$ if:

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

steps for another method:

1. Do the x-axis reflection and vertical stretch by making each point twice as far from the x-axis to find points A' , B' , C' , and D'

2. Now translate A' , B' , C' , and D' 1 right and 3 up to find the final location of A , B , C , and D called A'' , B'' , C'' , and D''

