

3.5 - Graphing Transformations (of general functions)

Use the graph and table of each general function below to give the resulting graph AND table after each specified transformation. Perform each transformation on the original!

f(x)

x	y
-4	-2
0	2
2	2
4	0

1. $f(x+2) - 4$

x	y
-6	-6
-2	-2
0	-2
2	-4

shift left 2
shift down 4

2. $-f(x)$

x	y
4	2
0	-2
2	-2
4	0

Reflection over x-axis
(change y)

3. $0.5f(x)$

x	y
4	-1
0	1
2	1
4	0

compress by a factor of $\frac{1}{2}$
(multiply y-values)

g(x)

x	y
-5	2
-2	4
0	-2
3	4

4. $g(x-3)$

x	y
-2	2
1	4
3	-2
6	4

shift right 3

5. $-g(x)+2$

x	y
-5	0
2	-2
0	4
3	-2

-2+2
-4+2
2+2
-4+2

reflect over x-axis
+ shift up 2

6. $2g(x+3)$

x	y
8	4
5	8
-3	4
0	8

shift left 3 or
stretch by a factor of 2

h(x)

x	y
-5	3
-2	-4
1	5
4	-2

7. $h(-x)$

x	y
5	3
2	4
-1	5
-4	-2

Reflect over y-axis
(change x)

8. $h(x-4) + 2$

x	y
-1	5
2	-2
5	7
8	0

Shift right 4 & shift up 2.

9. $-2h(x) - 1$

x	y
-5	-7
-2	7
1	-11
4	3

Reflect over x-axis & stretch by a factor of 2
Shift down 1

10. Given the parent function $p(x) = x^2$, give the resulting function after each additional transformation.
(Do NOT go back to the original function each time!)

<p>A. Shift left 3</p> $y = (x+3)^2$	<p>B. Reflect over the x-axis</p> $y = -(x+3)^2$	<p>C. Vertically stretch by a factor of 4</p> $y = -4(x+3)^2$	<p>D. Shift down 2 units</p> $y = -4(x+3)^2 - 2$
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11. The function $k(x)$ has x-intercepts at $(-2,0)$ and $(5,0)$, a y-intercept at $(0,4)$ and contains the point $(-5,7)$.

<p>a. List the x-intercepts of $k(x-3)$</p> <p>Shift Right 3</p> <p>$(1,0)$ $(8,0)$</p>	<p>b. Give the y-intercept of $k(x) + 5$</p> <p>Shift up 5</p> <p>$(0,9)$</p>	<p>c. Give the x-intercepts of $k(-x)$</p> <p>Reflect over y-axis</p> <p>$(2,0)$ $(-5,0)$</p>
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12. Give the name the parent function used below, then describe each transformation that has been done to the parent function:

$$g(x) = \frac{1}{2}\sqrt[3]{x-1} + 5$$

parent function: $\sqrt[3]{x}$
 Shift Right 1, compress by a factor of $\frac{1}{2}$,
 Shift up 5