

Assignment

Write

Describe the term *basic function* in the context of transformations using your own words.

Remember

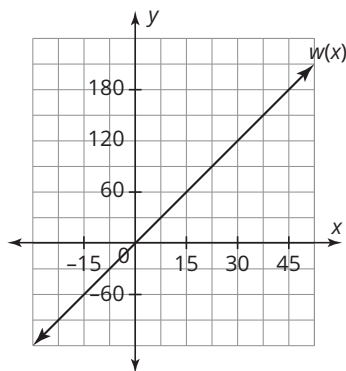
For the basic function $f(x) = x$, the transformed function $y = f(x) + D$ shows a vertical translation of the function. For $D > 0$, the resulting graph vertically shifts up. For $D < 0$, the resulting graph vertically shifts down.

The transformed function $y = Af(x)$ shows a vertical dilation of the function. For $|A| > 1$, the resulting graph vertically stretches by a factor of A units. For $0 < |A| < 1$, the resulting graph vertically compresses by a factor of A units. For $A < 0$, the resulting graph is vertically stretched or compressed and is reflected across the x -axis.

Practice

1. Given $w(x) = 4x$.

a. Graph $r(x) = 4 \cdot w(x)$. Then complete the table of corresponding points on $r(x)$.



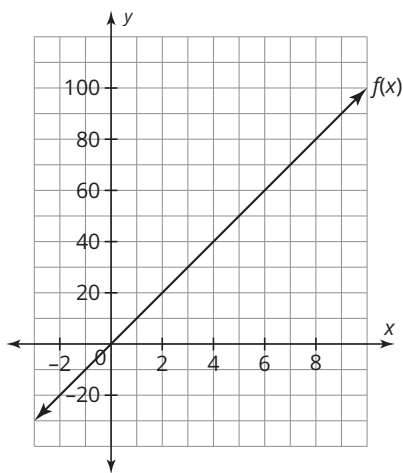
x	$w(x)$	$r(x)$
0		
15		
30		
45		

b. Describe the transformation performed on $w(x)$ to produce $r(x)$.

c. Write the equation for the function $r(x)$ in general form.

2. Given $f(x) = 10x$.

a. Graph $b(x) = f(x) - 30$. Then complete the table of corresponding points for $b(x)$.



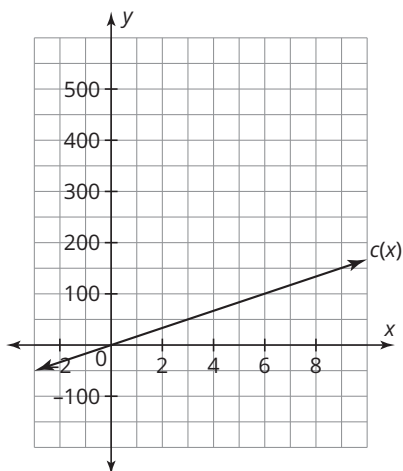
x	$f(x)$	$b(x)$
1		
2		
4		
6		
8		
9		

b. Write the equation for the function $b(x)$ in general form.

c. Describe the transformation performed on $f(x)$ to produce $b(x)$.

3. The cost for a group of people to attend the Speed Zone amusement park is modeled by the function $c(x) = 18x$, where x represents the number of people per vehicle. In order to pay for the renovations, the president of Speed Zone reorganized their pricing structure. The cost for admission is now tripled and parking costs \$15. Let $a(x)$ be the function that represents the new cost of admission into Speed Zone.

a. Sketch the graph of $a(x)$. Complete the table of corresponding points on $a(x)$.



x	$c(x)$	$a(x)$
2		
4		
6		
8		

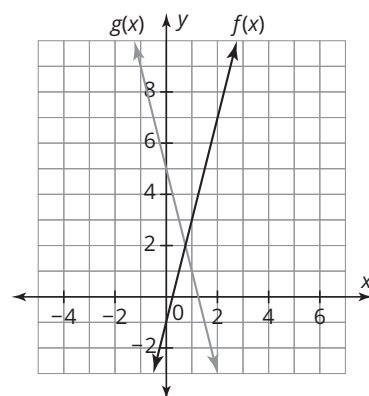
b. Write an equation for $a(x)$ in terms of $c(x)$.

c. Write the equation for the function $a(x)$ in general form.

d. Describe the transformation performed on $c(x)$ to produce $a(x)$.

Stretch

The functions $f(x)$ and $g(x)$ are shown on the graph. Write an equation for each function in general form. Then write an equation for $g(x)$ in terms of $f(x)$.



Review

1. Brody works as a fly-fishing guide. The table indicates the number of fish caught on each expedition he guided in a week and the amount of the tip he received for each expedition.

- Construct a scatter plot of the data.
- Based on the shape of the scatter plot, is a linear regression appropriate? What type of correlation appears to be present?
- Use technology to write a function to represent the line of best fit.
- Compute and interpret the correlation coefficient.

Number of Fish Caught	Amount of Tip (\$)
22	125
19	80
25	130
26	150
21	100
18	75
27	150

2. Determine whether each table of values represents a linear function. If so, write the function. If not, explain why.

a.

x	y
2	3
4	4
6	5
8	6

b.

x	y
-4	-17
-2	-9
2	7
4	17