Intro to Transformations – Worksheet

MCR3U

Jensen

1) Describe the transformations, in order, that are being done to the function f(x).

a) g(x)= -4f(x)

b) g(x)= f(3x)

c) $g(x) = \frac{1}{2}f(-x)$

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

e) $g(x) = 5f[-2(x-4)]$

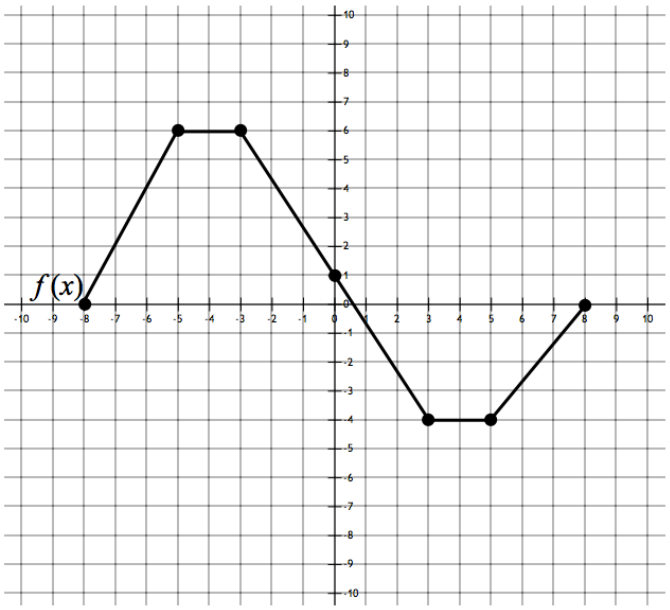
f) $g(x) = -2f(8x) + 4$

h) $g(x) = -\frac{1}{4}f[-3(x-1)] - 5$

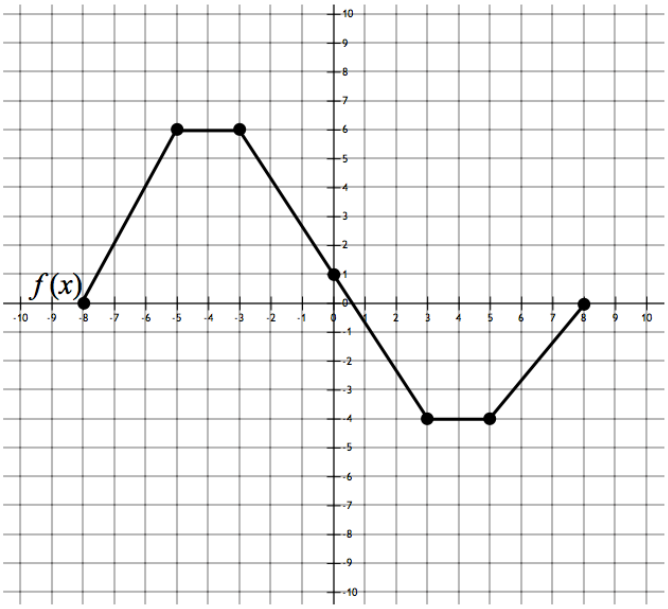
i) $g(x) = 4f\left[-\frac{1}{2}(x+2)\right] - 1$

2) For the graph of $f(x)$ given, sketch the graph of $g(x)$ after the given transformation.

a) $g(x) = 2f(x) - 2$



b) $g(x) = \frac{1}{2} f(x-1) + 1$



Answers

1) a) vertical reflection over the x-axis and vertical stretch bafo 4 $(-4y)$

b) horizontal compression bafo $\frac{1}{3}$ $\left(\frac{x}{3}\right)$

c) vertical compression bafo $\frac{1}{2}$ $\left(\frac{y}{2}\right)$, horizontal relection over the y-axis $(-x)$

d) vertical reflection over the x-axis and vertical compression bafo $\frac{1}{3}$ $\left(\frac{y}{-3}\right)$, horizontal stretch bafo 2 $(2x)$, phase shift left 1 unit $(x-1)$

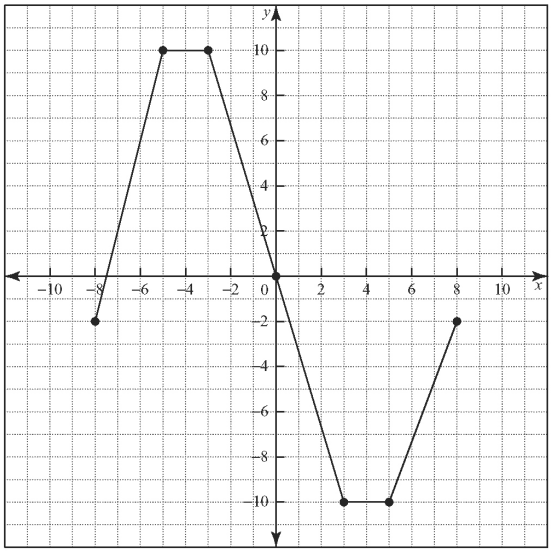
e) vertical stretch bafo 5 $(5y)$, horizontal reflection over the y-axis and horizontal compression bafo $\frac{1}{2}$ $\left(\frac{x}{-2}\right)$, phase shift right 4 units $(x+4)$

f) vertical reflection over the x-axis and vertical stretch bafo 2 $(-2y)$, horizontal compression bafo $\frac{1}{8}$ $\left(\frac{x}{8}\right)$, shift up 4 units $(y+4)$

h) vertical reflection over the x-axis and vertical compression bafo $\frac{1}{4}$ $\left(\frac{y}{-4}\right)$, horizontal reflection over the y-axis and horizontal compression bafo $\frac{1}{3}$ $\left(\frac{x}{-3}\right)$, phase shift right 1 unit $(x+1)$, shift down 5 units $(y-5)$

i) vertical stretch bafo 4 $(4y)$, horizontal reflection over the y-axis and horizontal stretch bafo 2 $(-2x)$, phase shift left 2 units $(x-2)$, shift down 1 unit $(y-1)$

2) a)



b)