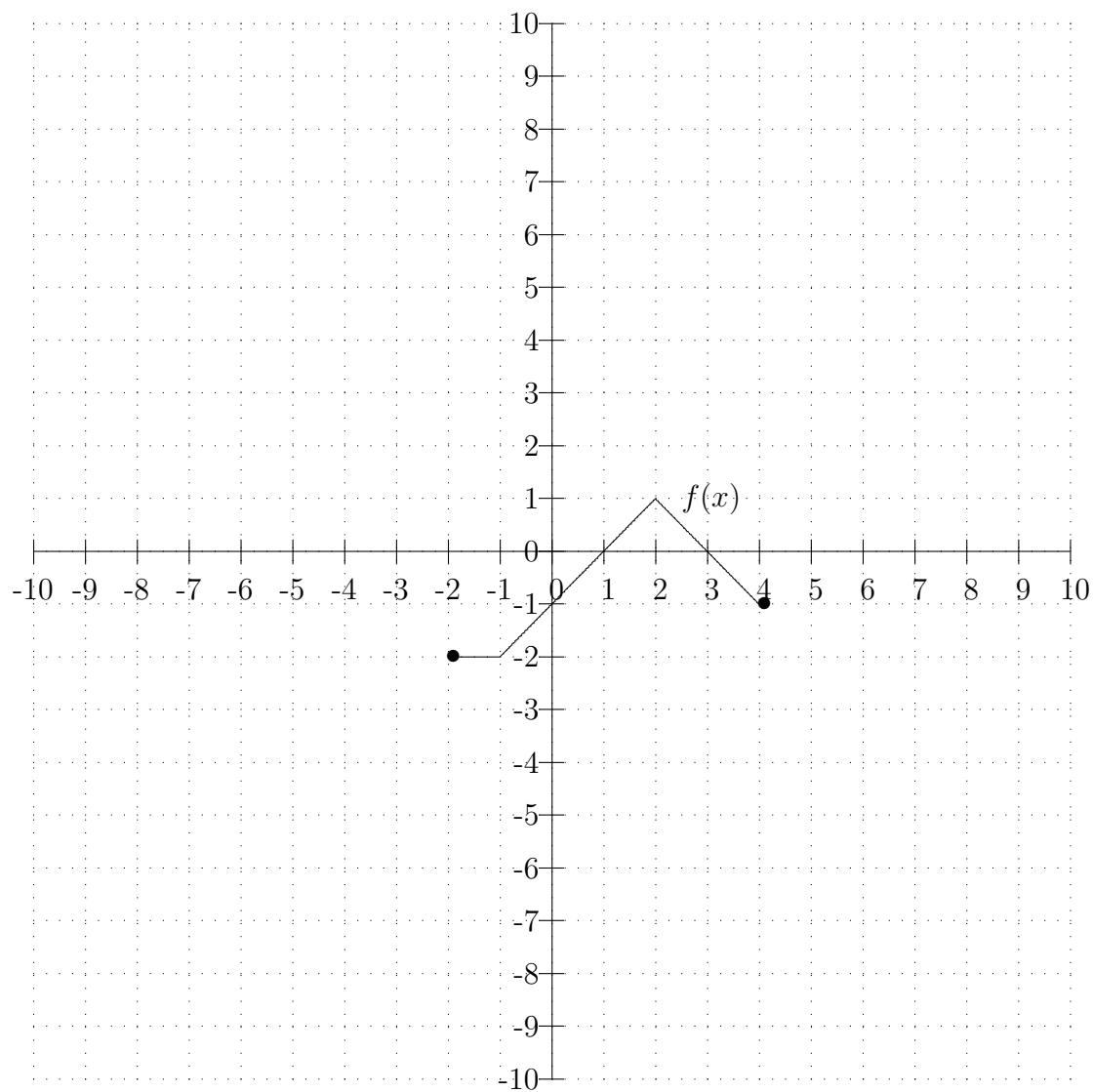


Practice on transformations
Mr. Neeman, 10A. October 21, 2011

The graph below is of the function $f(x)$.



For each of the following, describe the transformation in words, and then sketch the graph:

- (a) $-f(x)$
- (b) $-f(x) - 5$
- (c) $f(x + 5)$
- (d) $3f(x - 5)$
- (e) $f(-x) + 4$
- (f) $f(\frac{x}{2})$
- (g) $f(2x) + 8$

Solutions

- (a) $-f(x)$ is $f(x)$ reflected around the x axis.
 (b) $-f(x) - 5$ is $f(x)$ reflected around the x axis and then translated down by 5 units.
 (c) $f(x + 5)$ is $f(x)$ translated 5 units to the left.
 (d) $3f(x - 5)$ is $f(x)$ stretched vertically, around the x axis, by a factor of 3 and then translated to the right by 5 units.
 (e) $f(-x) + 4$ is $f(x)$ reflected around the y axis and then translated 4 units upwards.
 (f) $f(\frac{x}{2})$ is $f(x)$ stretched horizontally, around the y axis, by a factor of 2.
 (g) $f(2x) + 8$ is $f(x)$ compressed horizontally, around the y axis, by a factor of 2, and then translated 8 units upwards.

