

Exercise 1. Let T be the triangle with vertices $A(1, 2)$, $B(2, 4)$, and $C(2, 6)$. Compute and graph sets obtained from the following transformations of T .

- (a) none
- (b) shift left 7 and up 3;
- (c) shrink horizontally by a factor of 2 and stretch vertically by a factor of 3;
- (d) reflect across the x -axis, the y -axis, and both.

Exercise 2. Consider the equation $x^2 + y^2 = 4$. Find and graph the equations obtained by the following transformations of this equation.

- (a) none;
- (b) shift right 3 and left 4;
- (c) shift right 3 and left 4, then stretch horizontally by 2 and vertically by 3;
- (d) shift right 3 and left 4, then stretch horizontally by 2 and vertically by 3, then rotate around the origin.

Exercise 3. Consider the function $f(x) = 2x - 4$. Find and graph the functions obtained by the following transformations of this function.

- (a) none;
- (b) shift right 4;
- (c) shift down 3;
- (d) stretch horizontally by a factor of 2;
- (e) shrink vertically by a factor of 2;
- (d) shift left 2 and down 4, then stretch vertically by a factor of 2, then reflect across the y -axis.

Exercise 4. Consider the function $f(x) = x^2$. Find and graph the functions obtained by the following transformations of this function.

- (a) none;
- (b) shift right 4;
- (c) shift down 3;
- (d) stretch horizontally by a factor of 2;
- (e) shrink vertically by a factor of 2;
- (d) shift left 2 and down 4, then stretch vertically by a factor of 2, then reflect across the y -axis.