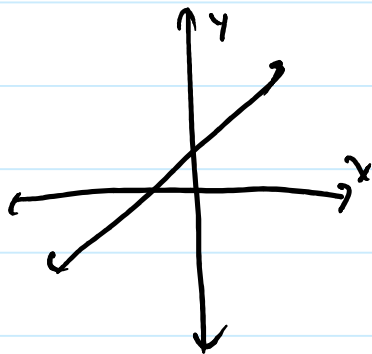# Sec 3.6   Transformations of Linear Functions

Family of Functions - Group of functions with
      similar characteristics

Parent Function - most basic form $f(x) = x$

Transformation - changes size, shape, position,
      or orientation of a graph.

Translations - Transformation that shifts a
      graph horizontally, or vertically. But does
      not change the shape.

Horizontal Translation

$$f(x) \rightarrow f(x-h)$$

Translation of h units

$$+h \longrightarrow \qquad -h \longleftarrow$$

$f(x+2)$ $h = -2$ 2 LEFT $f(x-(-2))$
$$= f(x+2)$$

$f(x-3)$ $h = +3$ 3 RIGHT

PARENT $f(x) = x$ $m = 1$ $b = 0$

Translate $f(x) = x$ THREE UNITS TO RIGHT

$$f(x-3) \qquad\qquad S(x) = x - 3$$

Translate $f(x) = 2x + 3$ Two UNITS LEFT
$$h = -2$$

$$f(x-h) = f(x+2)$$

$$g(x) = f(x+2) = 2(x+2) + 3$$
$$= 2x + 4 + 3$$
$$s(x) = 2x + 7$$