**6.4 – Slope-Intercept Form of the Equation for a Linear Function**

The equation of any line that is not vertical can be written in **slope-intercept form**.

$$y=mx+b$$

**where *m* is the slope of the line and *b* is the y-intercept.**

**Example 1: Writing an Equation Given Slope and y-Intercept**

A line has a slope of $-\frac{7}{4}$ and a y-intercept 5. Write an equation for this line.

*m =* $-\frac{7}{4}$

*b = 5*

Therefore, the equation of the line is $y= -\frac{7}{4}x+5$

**Example 2: Graphing a Line Given Its Equation in Slope-Intercept Form**

Use slope and y-intercept to graph the line $y= -\frac{5}{4}x-2$

*m =* $-\frac{5}{4}$

*b =* $-2$

So, plot the y-intercept. It is the point (0, -2). From this point, move down 5 units and right 4 units; or you can move up 5 units and left 4 units. Draw a line between these two points.

**Example 3: Writing an Equation Given a Graph**

Write an equation to describe the function.



You could verify this equation by creating a table of values.

**Example 4: Using an Equation of a Linear Function to Solve a Problem**

Jim runs a T-shirt company. For each order he receives, Jim charges a flat rate fee of $100, plus $6.95 per T-shirt.

a) Write an equation for the total cost, *C* dollars, for ordering *t* T-shirts.

b) Edwin ordered 76 T-shirts. What was the total cost?

c) Sharon paid a total cost of $767.20. How many T-shirts did she order?