Worksheet ---- Introduction to Basic Graphs

Linear Equations:

Any equation of the form **Ax + By = C** is said to be a linear equation in standard form.

Any equation of the form **y = mx + b** is said to be in slope-intercept form. The graph of any equation in slope-intercept form will be a straight line. The y-intercept of the graph is (0, b) and the slope of the line is m.

Any equation of the form **x = k** is a vertical line with undefined slope and an x-intercept at (k, 0).

Any equation of the form **y = k** is a horizontal line with slope 0 and a y-intercept at (0, k).

Note: There are many equations that do not graph into straight lines. These equations will be referred to as **nonlinear equations**.

Intercepts:

Intercepts for both linear and nonlinear equations may be found using the same technique.

An x-intercept will have the form (x , 0). To find the x-intercept, set y = 0. A y-intercept will have the form (0 , y). To find the y-intercept, set x = 0.

1. Graph the linear equations. Find the x-intercept, y-intercept and slope of each.

(a) $y = \frac{3}{4}x - 3$

(b) $y - 4 = 0$

(c) $x = -2$

(d) $3x + 2y = 6$

(e) $5x + 4y = 8$

(f) $15 + 7x = 3x - 5$

2. Graph each nonlinear equation. Find all x-intercepts and y-intercepts.

(a) $y = x^2$

(b) $y = x^2 - 3$

(c) $y = (x - 2)^2$

(d) $y = x^3 - 1$

(e) $y = |x|$

(f) $y = |x - 1|$

(g) $y = \sqrt{x - 2}$

(h) $y = -\frac{2}{x}$