Functions Review

Linear Function: A function of the form y = mx + b where m = slope and b = y-intercept.

Example 1: For the equation 6x - 4y = 8

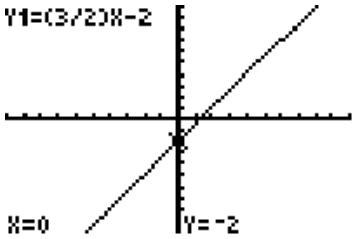
a) Write in the form y = mx + b

$$\frac{6x}{4} - \frac{8}{4} = \frac{4y}{4}$$

$$y = \frac{6x-8}{4}$$

$$y = \frac{3x}{2} - 2$$

b) Graph



c) State coordinates of x - intercept

$(1.\overline{3}, 0)$

d) State coordinates of y - intercept

$(0, -2)$

e) State slope

$3/2$

Quadratic Function: A function of degree 2

Example 2: For the function $y = x^2 - 7x + 10$

a) Graph

b) State the coordinates of the vertex

(3.5, -2.25)

c) State the max/min values

-2.25

d) State the equation of axis of symmetry

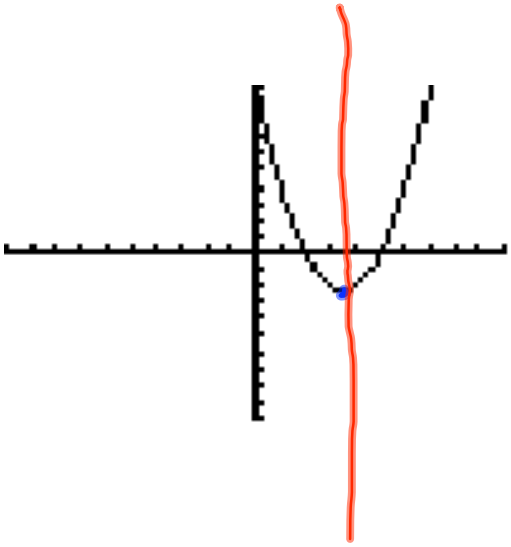
x = 3.5

e) State the coordinates of x-intercepts

(2, 0) (5, 0)

f) State the coordinates of y-intercept

(0, 10)



Cubic Function: A functions of degree three

Example 3: For the function $y = -3x^3 - 8x^2 - 3$

a) Graph

b) State the coordinates of relative max/min points

rel min: (-1.8, -11.4) rel max: (0, -3)

c) State the coordinates of zeros

(-2.8, 0)

X = -2.8 y = 2E-

d) State the coordinates of y - intercept

(0, -3)

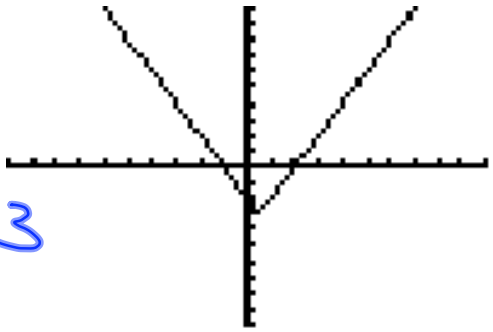
Absolute Value Function: A function with a variable within the absolute value symbol.

Example 4: For the function $y = |2x - 1| - 3$

a) Graph

b) State the coordinates of the vertex

(0.5, -3)



c) State the domain and range

D: $x \in R$ R: $y \geq -3$

d) State the equation of the axis of symmetry

$x = 0.5$

e) State all intercepts

x-int (-1, 0) (2, 0)

y-int: (0, -2)

Radical Functions: A function that has a variable in the radicand.

Example 5: For the function $y = \sqrt{x+11} - 15$
a) Graph
b) State window settings to be able to see x and y - intercepts
c) State domain and range
d) State all intercepts

Window Settings

x_{min} x_{max} xsc

X: [-5, 1, 1]

Y: [-13, -11, 0.5]

Algebraically finding x & y - units

y-int:

$y = \sqrt{x+11} - 15$

Substite $x = 0$

$y = \sqrt{0+11} - 15$

$y = -11.68$

X-int

$y = \sqrt{x+11} - 15$

$0 \overset{+15}{=} \sqrt{x+11} - 15 \quad {}^{+15}$

$(15)^2 = \left(\sqrt{x+11}\right)^2$

$225 = x + 11$

$x = 214$

Rational Function: A function of the form $f(x) = \frac{g(x)}{h(x)}$ where g(x) and h(x) are polynomials and h(x) not equat to zero.

Asymptote: A line that a curve approaches more and more closely.

Example 6: For the function $y = \frac{-3x}{x-1}$
a) Graph
b) State the vertical and horizontal asymptotes
c) State the domain and range