Real Functions and Equations

Constant Function (zeroth degree):

$y = k$
$(0, k)$ is the y-intercept

Linear Function (first degree):

$y = ax + k$
a is the slope, $(0, k)$ is the y-intercept

Quadratic Function (second degree):

$y = ax^2 + bx + c$ ……. General Form
$y = a(x - x_1)(x - x_2)$ …. X-intercept Form
$y = a\big(b\big(x - h\big)\big)^2 + k$ ….. Standard Form

(h, k) is the Vertex

Absolute Value Function:

$y = a\big|b(x - h)\big| + k$ ……. Standard Form

(h, k) is the Vertex

Greatest Integer Function:

$y = a\big[b(x - h)\big] + k$ ……... Standard Form

(h, k) is a solid point
$L = \dfrac{1}{|b|}$ …… Step length
If b > 0 then the step is open on the right, closed on the left
If b < 0 then the step is closed on the right, open on the left
$D = |a|$ …… Vertical distance between steps
$m = ab$ …… Slope of the graph

Rational Function:

$y = \frac{a}{b(x-h)} + k$ ..... Standard Form

$x = h, y = k$ …… Asymptotes

Square-Root Function:

$y = a\sqrt{b(x-h)} + k$ ……. Standard Form

(h,k) is the Vertex

$b(x-h) \geq 0$ is the Domain