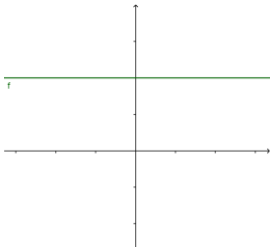
The Library of Functions

The Constant Function:

$f(x) = b$

Domain: $(-\infty, \infty)$

Range: $\{b\}$

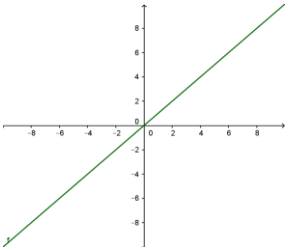


The Identity Function:

$f(x) = x$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

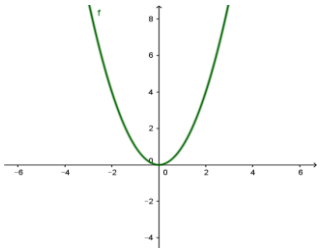


The Quadratic Function:

$f(x) = x^2$

Domain: $(-\infty, \infty)$

Range: $[0, \infty)$

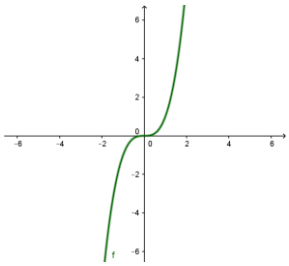


The Cubic Function:

$f(x) = x^3$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

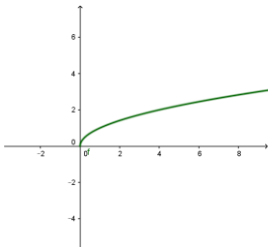


The Square Root Function:

$f(x) = \sqrt{x}$

Domain: $[0, \infty)$

Range: $[0, \infty)$

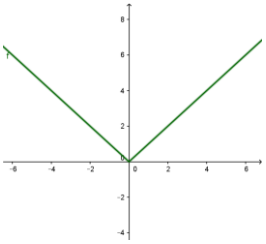


The Absolute Value Function:

$f(x) = |x|$

Domain: $(-\infty, \infty)$

Range: $[0, \infty)$

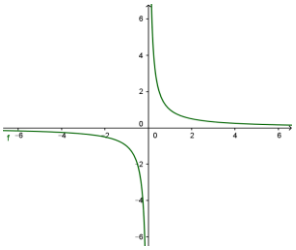


The Reciprocal Function:

$f(x) = \dfrac{1}{x}$

Domain: $(-\infty, 0) \cup (0, \infty)$

Range: $(-\infty, 0) \cup (0, \infty)$

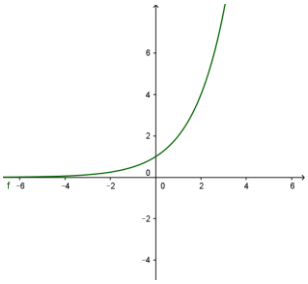


The Exponential Function:

$f(x) = b^x \quad (b > 0, b \neq 1)$

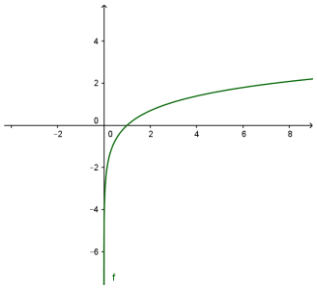
Domain: $(-\infty, \infty)$

Range: $(0, \infty)$



The Logarithmic Function:

$f(x) = \log_b x \quad (b > 0, b \neq 1)$

Domain: $(0, \infty)$

Range: $(-\infty, \infty)$