

Section 3.4

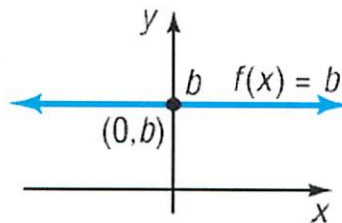
Library of Functions

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Constant Function

$$f(x) = b, \quad b \text{ is a real number}$$

Constant Function



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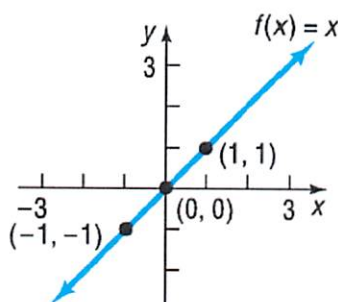
Domain $(-\infty, \infty)$
Range $\{b\}$
y-int $(0, b)$
x-int None
EVEN

LINEAR FUNCTION

Identity Function

$$f(x) = x$$

Identity Function



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$$f(x) = \underset{1}{m}x + \underset{0}{b}$$

Domain $(-\infty, \infty) \mathbb{R}$

x-int } $(0, 0)$
y-int }

Range \mathbb{R}
increasing

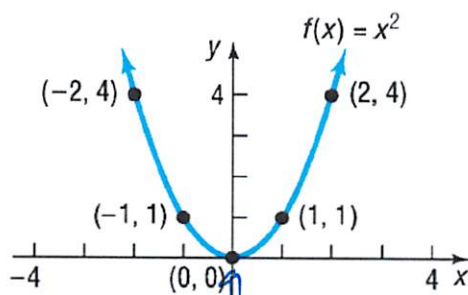
ODD

QUADRATIC FUNCTION

Square Function

$$f(x) = x^2$$

Square Function



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$$f(x) = \underset{1}{a}x^2 + \underset{0}{b}x + \underset{0}{c}$$

Domain \mathbb{R}

Range $[0, \infty)$

x-int } $(0, 0)$
y-int }

decreasing $(-\infty, 0)$

increasing $(0, \infty)$

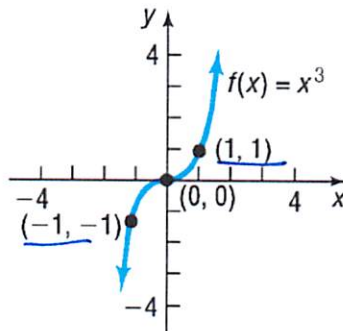
VERTEX

abs. Min $(0, 0)$
EVEN

Cube Function

$$f(x) = x^3$$

Cube Function



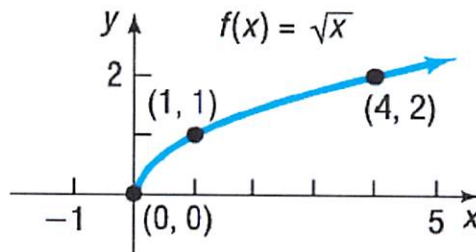
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Domain \mathbb{R}
Range \mathbb{R}
x-int $\{ (0, 0) \}$
y-int $\{ (0, 0) \}$
INCREASING
ODD

Square Root Function

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

Square Root Function



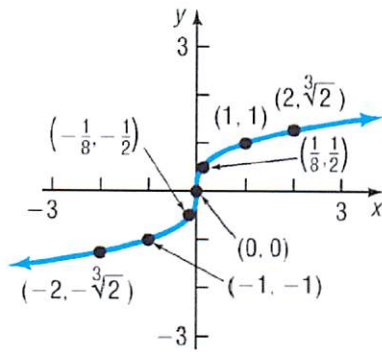
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Domain $[0, \infty)$
Range $[0, \infty)$
x-int $\{ (0, 0) \}$
y-int $\{ (0, 0) \}$
INCREASING
Neither.
Abs. min $(0, 0)$

Cube Root Function

$$f(x) = \sqrt[3]{x}$$

Cube Root Function



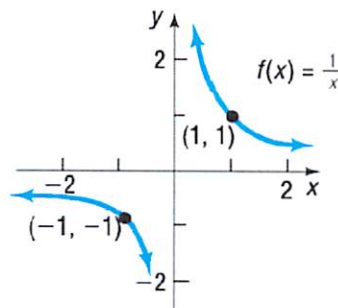
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Domain \mathbb{R}
Range \mathbb{R}
x-int $\{0\}$
y-int $\{0\}$
ODD
INCREASING.

Reciprocal Function

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

Reciprocal Function



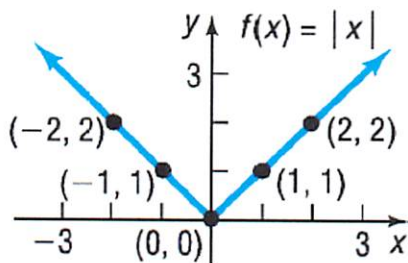
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Domain $\mathbb{R} - \{0\}$
Range $\mathbb{R} - \{0\}$
x-int $\{None\}$
y-int $\{None\}$
Decreasing $(-\infty, 0) \cup (0, \infty)$
ODD

Absolute Value Function

$$f(x) = |x|$$

Absolute Value Function



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Domain \mathbb{R}

Range $[0, \infty) \mathbb{R}_+$

EVEN

x-int (0, 0)

y-int (0, 0)

increasing $(0, \infty)$

decreasing $(-\infty, 0)$

Abs min (0, 0)