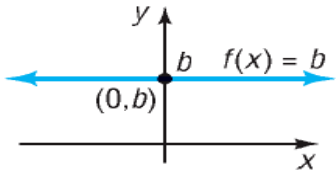
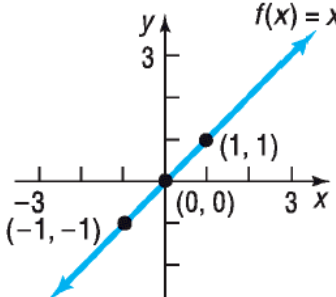
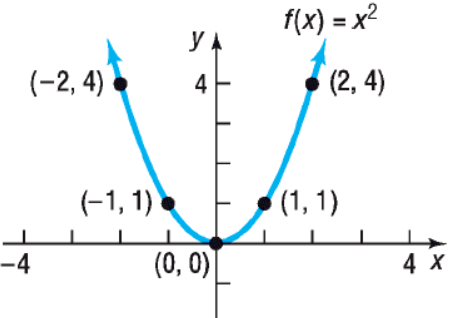
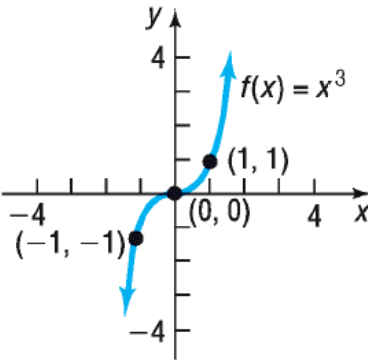
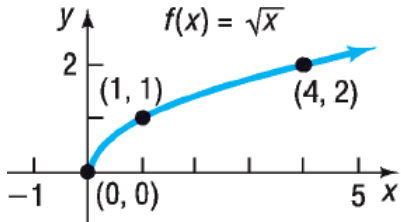
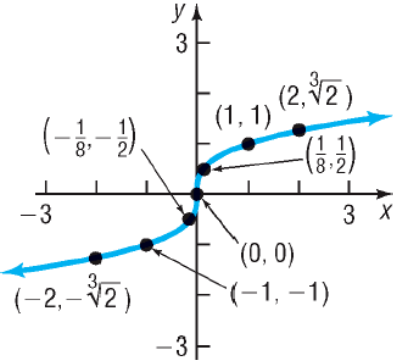
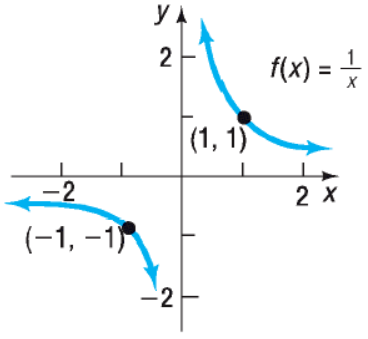
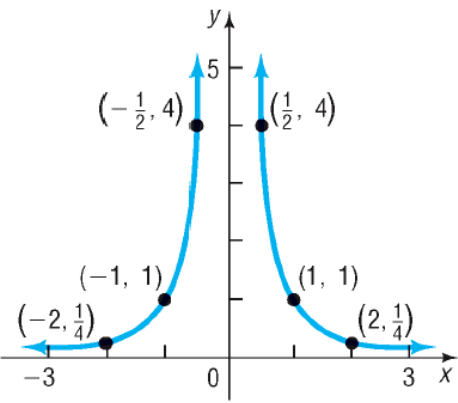
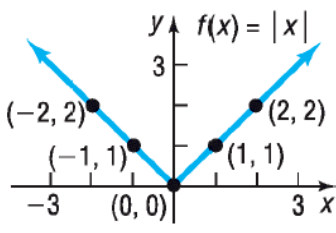
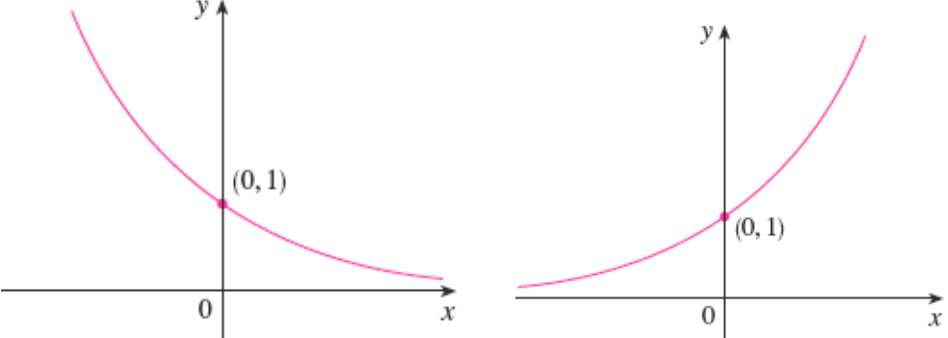


A Library of Functions

<p><u>Constant Function</u></p> $f(x) = b$ <p>Domain: $(-\infty, \infty)$ Range: $\{b\}$</p>	
<p><u>Identity Function</u></p> $f(x) = x$ <p>Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$</p>	
<p><u>Square Function</u></p> $f(x) = x^2$ <p>Domain: $(-\infty, \infty)$ Range: $[0, \infty)$</p> <p>(all even power functions generally have this shape)</p>	
<p><u>Cubic Function</u></p> $f(x) = x^3$ <p>Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$</p>	
<p><u>Square Root Function</u></p> $f(x) = \sqrt{x}$ <p>Domain: $(-\infty, \infty)$ Range: $[0, \infty)$</p>	

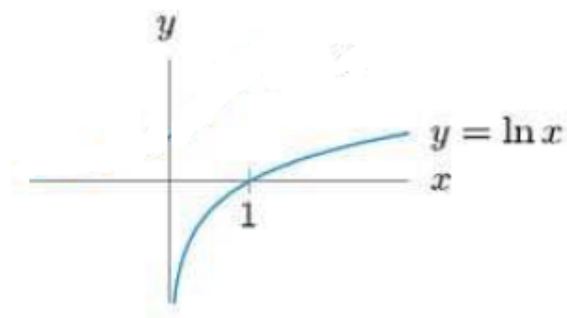
<p>Cube Root Function</p> $f(x) = \sqrt[3]{x}$ <p>Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$</p>	
<p>Reciprocal Function</p> $f(x) = \frac{1}{x}$ <p>Domain: $(-\infty, 0) \cup (0, \infty)$ Range: $(-\infty, 0) \cup (0, \infty)$</p>	
<p>Squared Reciprocal Function</p> $f(x) = \frac{1}{x^2}$ <p>Domain: $(-\infty, 0) \cup (0, \infty)$ Range: $[0, \infty)$</p>	
<p>Absolute Value Function</p> $f(x) = x = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$ <p>Domain: $(-\infty, \infty)$ Range: $[0, \infty)$</p>	
<p>Exponential Functions</p> $f(x) = a^x \text{ or } f(x) = e^{kx}$ <p>Domain: $(-\infty, \infty)$ Range: $(0, \infty)$</p>	 <p style="text-align: center;">$0 < a < 1 \text{ or } k < 0$ $a > 1 \text{ or } k > 0$</p>

Natural Logarithmic Function

$$f(x) = \ln x$$

Domain: $(0, \infty)$

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

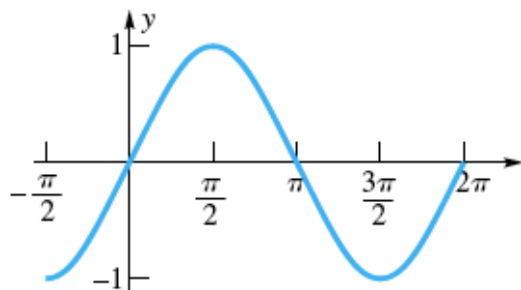


Sine Function

$$f(x) = \sin x$$

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

Range: $[-1, 1]$

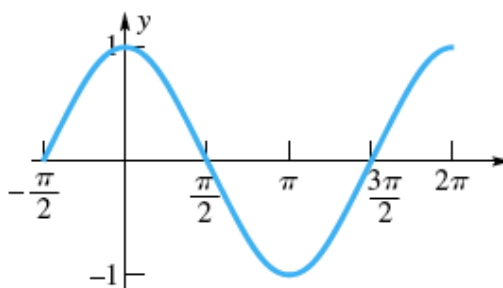


Cosine Function

$$f(x) = \cos x$$

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

Range: $[-1, 1]$

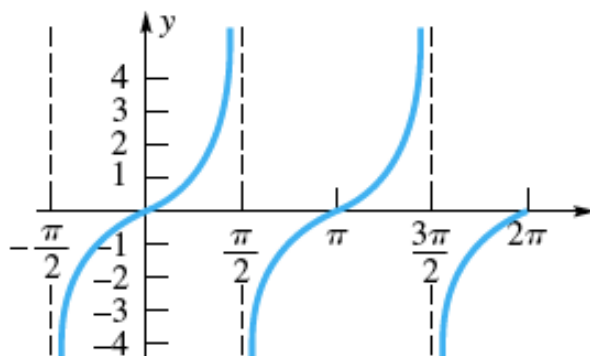


Tangent Function

$$f(x) = \tan x$$

Domain: $\left\{ x \mid x \neq \frac{\pi}{2}k \text{ where } k \text{ is an integer} \right\}$

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

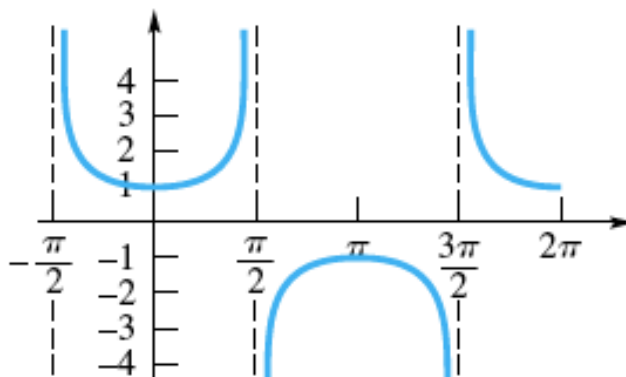


Secant Function

$$f(x) = \sec x$$

Domain: $\left\{ x \mid x \neq \frac{\pi}{2}k \text{ where } k \text{ is an integer} \right\}$

Range: $(-\infty, -1] \cup [1, \infty)$

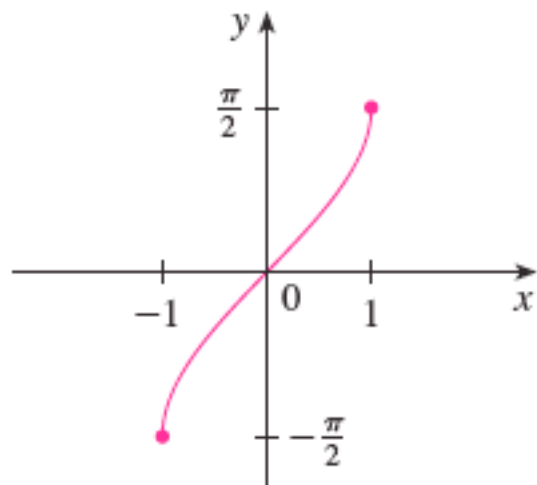


Inverse Sine Function

$$f(x) = \sin^{-1} x \text{ or } \arcsin x$$

Domain: $-1 \leq x \leq 1$

$$\text{Range: } -\frac{\pi}{2} \leq f(x) \leq \frac{\pi}{2}$$



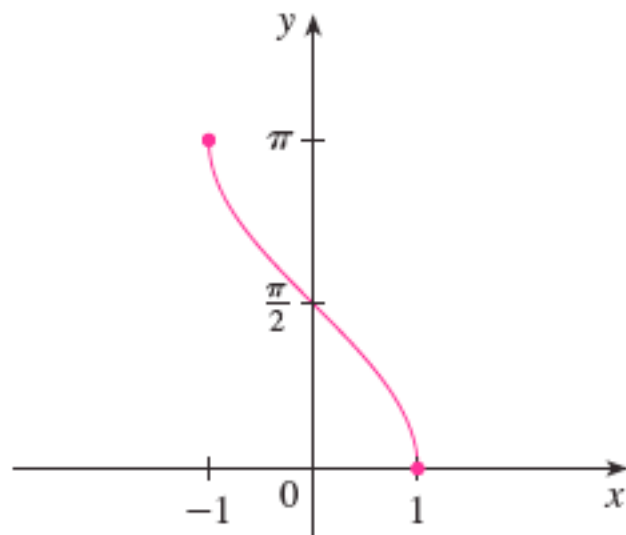
Inverse Cosine Function

$$f(x) = \cos^{-1} x \text{ or } \arccos x$$

Domain: $-1 \leq x \leq 1$

$$\text{Range: } 0 \leq f(x) \leq \pi$$

Note: $\sec^{-1} x = \cos^{-1}\left(\frac{1}{x}\right)$



Inverse Tangent Function

$$f(x) = \tan^{-1} x \text{ or } \arctan x$$

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

$$\text{Range: } -\frac{\pi}{2} < f(x) < \frac{\pi}{2}$$

