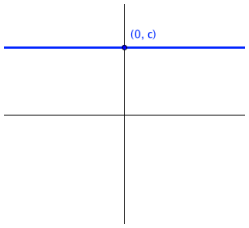
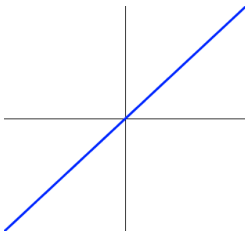
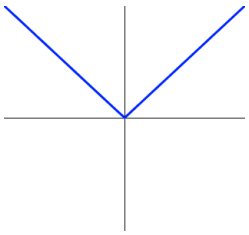
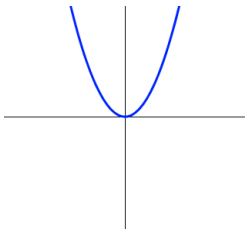
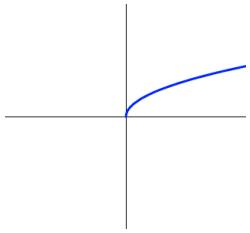
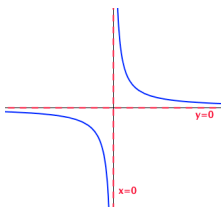
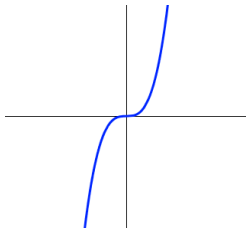
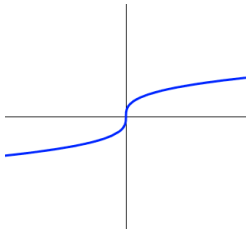
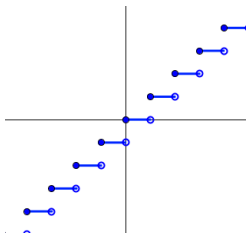
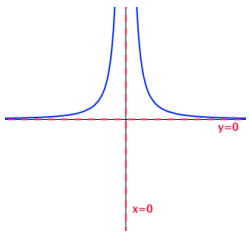
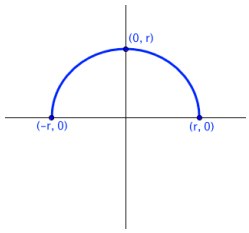
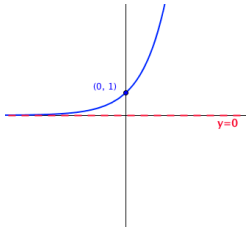
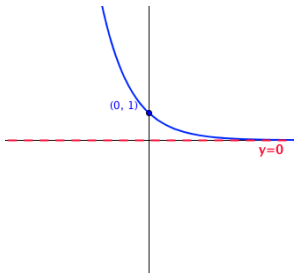
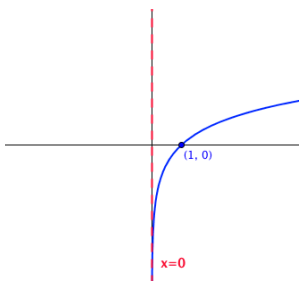
Library of Functions ANSWERS

	Equation	Graph	
1	Constant $f(x)=c$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y = c\}$ Interval D: $(-\infty,\infty)$ R: N/A Symmetry: y-axis (y=o also has x-axis and origin) Even/Odd/Neither Even, (y=o is both Even and Odd) End Behavior $x \to -\infty \quad f(x) \to c$ $x \to \infty \quad f(x) \to c$
2	Identity $f(x)=x$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y \in R\}$ Interval D: $(-\infty,\infty)$ R: $(-\infty,\infty)$ Symmetry: Origin, y=x Even/Odd/Neither: Odd End Behavior $x \to -\infty \quad f(x) \to -\infty$ $x \to \infty \quad f(x) \to \infty$
3	Absolute Value $f(x)=\lvert x \rvert$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y \geq 0\}$ Interval D: $(-\infty,\infty)$ R: $[0,\infty)$ Symmetry: y-axis Even/Odd/Neither: Even End Behavior $x \to -\infty \quad f(x) \to \infty$ $x \to \infty \quad f(x) \to \infty$
4	Quadratic $f(x)=x^2$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y \geq 0\}$ Interval D: $(-\infty,\infty)$ R: $[0,\infty)$ Symmetry: y-axis Even/Odd/Neither: Even End Behavior $x \to -\infty \quad f(x) \to \infty$ $x \to \infty \quad f(x) \to \infty$

5	Square Root $f(x)=\sqrt{x}$		Set D: $\{x \mid x \geq 0\}$ R: $\{y \mid y \geq 0\}$ Interval D: $[0,\infty)$ R: $[0,\infty)$ Symmetry: none Even/Odd/Neither: none End Behavior $x \to -\infty \quad f(x) \to$ does not exist $x \to \infty \quad f(x) \to \infty$
6	Reciprocal $f(x)=\frac{1}{x}$		Set D: $\{x \mid x \neq 0\}$ R: $\{y \mid y \neq 0\}$ Interval D: $(-\infty,0)\cup(0,\infty)$ R: $(-\infty,0)\cup(0,\infty)$ Symmetry: origin, y=x Even/Odd/Neither: Odd End Behavior $x \to -\infty \quad f(x) \to 0$ $x \to \infty \quad f(x) \to 0$
7	Cubic $f(x)=x^3$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y \in R\}$ Interval D: $(-\infty,\infty)$ R: $(-\infty,\infty)$ Symmetry: Origin Even/Odd/Neither: Odd End Behavior $x \to -\infty \quad f(x) \to -\infty$ $x \to \infty \quad f(x) \to \infty$
8	Cube Root $f(x)=\sqrt[3]{x}$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y \in R\}$ Interval D: $(-\infty,\infty)$ R: $(-\infty,\infty)$ Symmetry: Origin Even/Odd/Neither: Odd End Behavior $x \to -\infty \quad f(x) \to -\infty$ $x \to \infty \quad f(x) \to \infty$

9	Greatest Integer $f(x)=[x]$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y \in Z\}$ Interval D: $(-\infty,\infty)$ R: N/A Symmetry: None Even/Odd/Neither: None End Behavior $x \to -\infty \quad f(x) \to -\infty$ $x \to \infty \quad f(x) \to \infty$
10	Reciprocal of a Square $f(x)=\frac{1}{x^2}$		Set D: $\{x \mid x \neq 0\}$ R: $\{y \mid y > 0\}$ Interval D: $(-\infty,0)\cup(0,\infty)$ R: $(0,\infty)$ Symmetry: y-axis Even/Odd/Neither: Even End Behavior $x \to -\infty \quad f(x) \to 0$ $x \to \infty \quad f(x) \to 0$
11	Semicircle $f(x)=\sqrt{r^2-x^2}$		Set D: $\{x \mid -r \le x \le r\}$ R: $\{y \mid 0 \le y \le r\}$ Interval D: $[-r,r]$ R: $[0,r]$ Symmetry: y-axis Even/Odd/Neither: Even End Behavior $x \to -\infty \quad f(x) \to$ does not exist ; $x \to \infty \quad f(x) \to$ does not exist
12	Exponential Growth $f(x)=(b)^x$ $b>1$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y > 0\}$ Interval D: $(-\infty,\infty)$ R: $(0,\infty)$ Symmetry: none Even/Odd/Neither: Neither End Behavior $x \to -\infty \quad f(x) \to 0$ $x \to \infty \quad f(x) \to \infty$

13	Exponential Decay $f(x)=(b)^x$ $0<b<1$		Set D: $\{x \mid x \in R\}$ R: $\{y \mid y > 0\}$ Interval D: $(-\infty,\infty)$ R: $(0,\infty)$ Symmetry: none Even/Odd/Neither: Neither End Behavior $x \to -\infty \quad f(x) \to \infty$ $x \to \infty \quad f(x) \to 0$
14	Natural Logarithm $f(x)=\ln x$		Set D: $\{x \mid x > 0\}$ R: $\{y \mid y \in R\}$ Interval D: $(0,\infty)$ R: $(-\infty,\infty)$ Symmetry: none Even/Odd/Neither: Neither End Behavior $x \to -\infty \quad f(x) \to$ does not exist $x \to \infty \quad f(x) \to \infty$