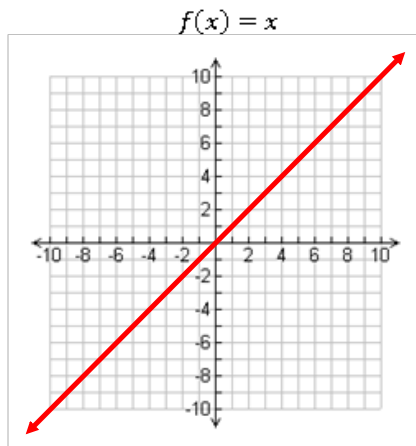


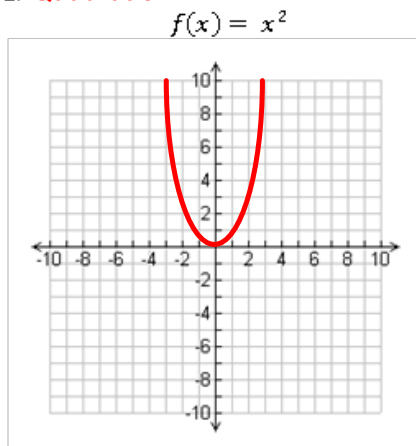
Basic Functions

1. **Linear**



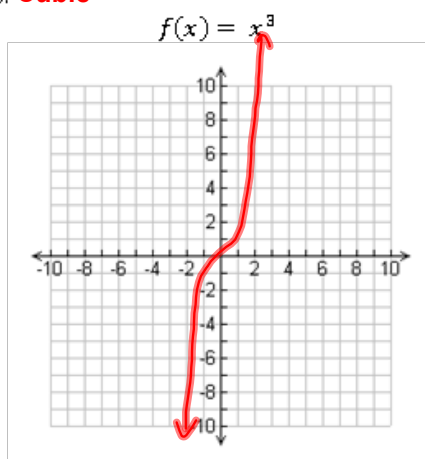
- a) Domain (x): **All Real Numbers, or $(-\infty, \infty)$**
- b) Range (y): **All Real Numbers, or $(-\infty, \infty)$**
- c) Intervals over which function is:
 - Increasing: **$(-\infty, \infty)$**
 - Decreasing: **None**
 - Constant: **None**
- d) Local maxima: **None** Local minima: **None**
- e) Continuous: **yes** or no
- f) Type: Even **Odd** Neither
- g) Upper bound: **None** Lower bound: **None**
- h) Horizontal Asymptote(s): **None**
- i) Vertical Asymptote(s): **None**
- j) End Behavior:
 - as $x \rightarrow -\infty f(x) \rightarrow -\infty$ as $x \rightarrow \infty f(x) \rightarrow \infty$

2. **Quadratic**



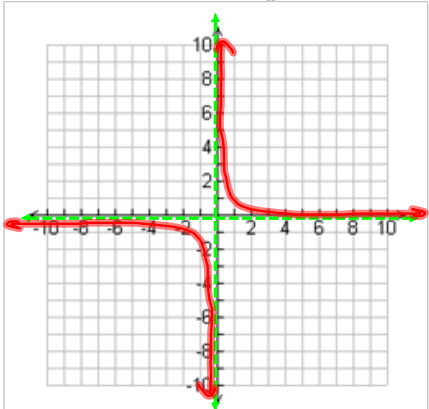
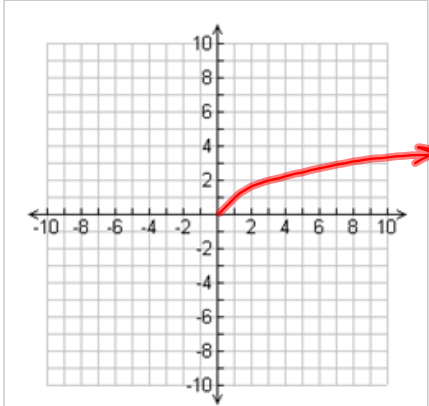
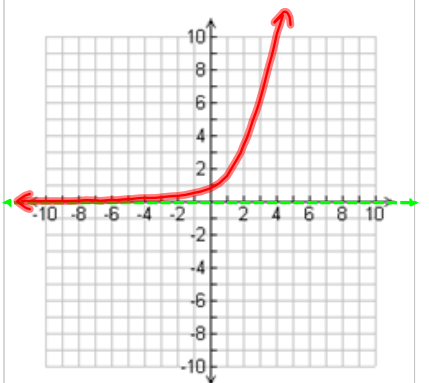
- a) Domain (x): **All Real Numbers, or $(-\infty, \infty)$**
- b) Range (y): **$y \geq 0$, or $[0, \infty)$**
- c) Intervals over which function is:
 - Increasing: **$[0, \infty)$**
 - Decreasing: **$(-\infty, 0]$**
 - Constant: **None**
- d) Local maxima: **None** Local minima: **$y = 0$**
- e) Continuous: **yes** or no
- f) Type: **Even** Odd Neither
- g) Upper bound: **None** Lower bound: **$y = 0$**
- h) Horizontal Asymptote(s): **None**
- i) Vertical Asymptote(s): **None**
- j) End Behavior:
 - as $x \rightarrow -\infty f(x) \rightarrow \infty$ as $x \rightarrow \infty f(x) \rightarrow \infty$

3. **Cubic**



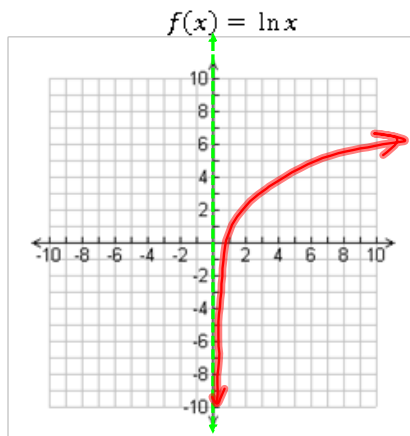
- a) Domain (x): **All Real Numbers, or $(-\infty, \infty)$**
- b) Range (y): **All Real Numbers, or $(-\infty, \infty)$**
- c) Intervals over which function is:
 - Increasing: **$(-\infty, \infty)$**
 - Decreasing: **None**
 - Constant: **None**
- d) Local maxima: **None** Local minima: **None**
- e) Continuous: **yes** or no
- f) Type: Even **Odd** Neither
- g) Upper bound: **None** Lower bound: **None**
- h) Horizontal Asymptote(s): **None**
- i) Vertical Asymptote(s): **None**
- j) End Behavior:
 - as $x \rightarrow -\infty f(x) \rightarrow -\infty$ as $x \rightarrow \infty f(x) \rightarrow \infty$

Basic Functions

<p>4. Reciprocal</p> $f(x) = \frac{1}{x}$ 	<p>a) Domain (x): $(-\infty, 0) \cup (0, \infty)$ b) Range (y): $(-\infty, 0) \cup (0, \infty)$ c) Intervals over which function is: Increasing: None Decreasing: $(-\infty, 0) \cup (0, \infty)$ Constant: None d) Local maxima: None Local minima: None e) Continuous: yes or no f) Type: Even Odd Neither g) Upper bound: None Lower bound: None h) Horizontal Asymptote(s): y = 0 i) Vertical Asymptote(s): x = 0 j) End Behavior: as $x \rightarrow -\infty$ $f(x) \rightarrow 0$ as $x \rightarrow 0^-$ $f(x) \rightarrow -\infty$ as $x \rightarrow 0^+$ $f(x) \rightarrow \infty$ as $x \rightarrow \infty$ $f(x) \rightarrow 0$</p>
<p>5. Square Root</p> $f(x) = \sqrt{x}$ 	<p>a) Domain (x): $x \geq 0$; or $[0, \infty)$ b) Range (y): $y \geq 0$; or $[0, \infty)$ c) Intervals over which function is: Increasing: $x \geq 0$; or $[0, \infty)$ Decreasing: None Constant: None d) Local maxima: None Local minima: y = 0 e) Continuous: yes or no f) Type: Even Odd Neither g) Upper bound: None Lower bound: y = 0 h) Horizontal Asymptote(s): None i) Vertical Asymptote(s): None j) End Behavior: as $x \rightarrow 0^+$ $f(x) \rightarrow 0$ as $x \rightarrow \infty$ $f(x) \rightarrow \infty$</p>
<p>6. Exponential</p> $f(x) = e^x$ 	<p>a) Domain (x): All Real Numbers, or $(-\infty, \infty)$ b) Range (y): y > 0; or $(0, \infty)$ c) Intervals over which function is: Increasing: $(-\infty, \infty)$ Decreasing: None Constant: None d) Local maxima: None Local minima: None e) Continuous: yes or no f) Type: Even Odd Neither g) Upper bound: None Lower bound: y = 0 h) Horizontal Asymptote(s): y = 0 i) Vertical Asymptote(s): None j) End Behavior: as $x \rightarrow -\infty$ $f(x) \rightarrow 0$ as $x \rightarrow \infty$ $f(x) \rightarrow \infty$</p>

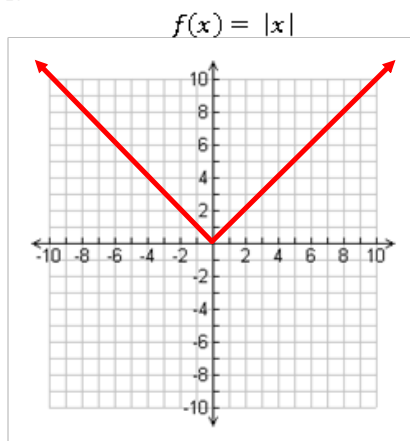
Basic Functions

7. Natural Logarithm



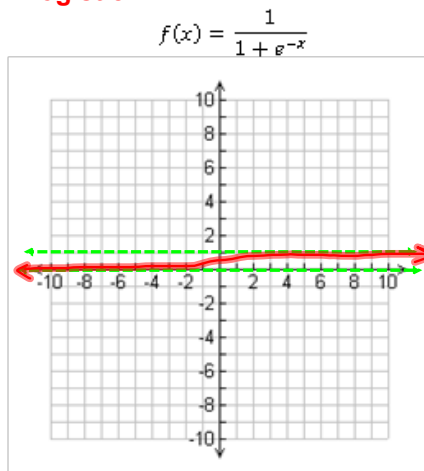
- a) Domain (x): $x > 0$; or $(0, \infty)$
- b) Range (y): **All Real Numbers, or $(-\infty, \infty)$**
- c) Intervals over which function is:
 - Increasing: $(-\infty, \infty)$
 - Decreasing: **None**
 - Constant: **None**
- d) Local maxima: **None** Local minima: **None**
- e) Continuous: **yes** or no
- f) Type: Even Odd **Neither**
- g) Upper bound: **None** Lower bound: **None**
- h) Horizontal Asymptote(s): **None**
- i) Vertical Asymptote(s): **$x = 0$**
- j) End Behavior:
 - as $x \rightarrow 0^+ f(x) \rightarrow -\infty$ as $x \rightarrow \infty f(x) \rightarrow \infty$

8. Absolute Value



- a) Domain (x): **All Real Numbers, or $(-\infty, \infty)$**
- b) Range (y): **$y \geq 0$; or $[0, \infty)$**
- c) Intervals over which function is:
 - Increasing: $(0, \infty)$
 - Decreasing: $(-\infty, 0)$
 - Constant: **None**
- d) Local maxima: **None** Local minima: **$y = 0$**
- e) Continuous: **yes** or no
- f) Type: **Even** Odd Neither
- g) Upper bound: **None** Lower bound: **$y = 0$**
- h) Horizontal Asymptote(s): **None**
- i) Vertical Asymptote(s): **None**
- j) End Behavior:
 - as $x \rightarrow -\infty f(x) \rightarrow \infty$ as $x \rightarrow \infty f(x) \rightarrow \infty$

9. Logistic



- a) Domain (x): **All Real Numbers, or $(-\infty, \infty)$**
- b) Range (y): **$0 < y < 1$**
- c) Intervals over which function is:
 - Increasing: $(-\infty, \infty)$
 - Decreasing: **None**
 - Constant: **None**
- d) Local maxima: **None** Local minima: **None**
- e) Continuous: **yes** or no
- f) Type: Even Odd **Neither**
- g) Upper bound: **$y = 1$** Lower bound: **$y = 0$**
- h) Horizontal Asymptote(s): **$y = 0, y = 1$**
- i) Vertical Asymptote(s): **None**
- j) End Behavior:
 - as $x \rightarrow -\infty f(x) \rightarrow 0$ as $x \rightarrow \infty f(x) \rightarrow 1$