

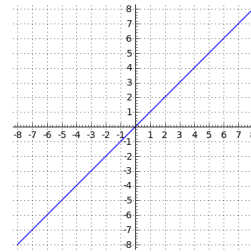
MCR3U: Functions

## Parent Functions

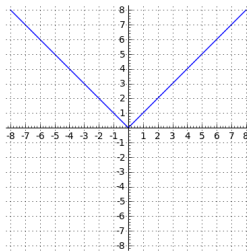
J. Garvin



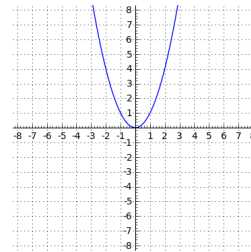
Slide 1/10

Linear Function,  $f(x) = x$ 

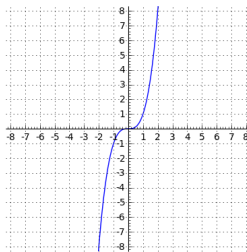
y-intercept:  $(0, 0)$  Domain:  $\{x \in \mathbb{R}\}$   
 x-intercept:  $(0, 0)$  Range:  $\{f(x) \in \mathbb{R}\}$

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Slide 2/10Absolute Value Function,  $f(x) = |x|$ 

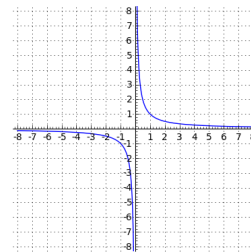
y-intercept:  $(0, 0)$  Domain:  $\{x \in \mathbb{R}\}$   
 x-intercept:  $(0, 0)$  Range:  $\{f(x) \in \mathbb{R} \mid f(x) \geq 0\}$

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Slide 3/10Quadratic Function,  $f(x) = x^2$ 

y-intercept:  $(0, 0)$  Domain:  $\{x \in \mathbb{R}\}$   
 x-intercept:  $(0, 0)$  Range:  $\{f(x) \in \mathbb{R} \mid f(x) \geq 0\}$

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Slide 4/10Cubic Function,  $f(x) = x^3$ 

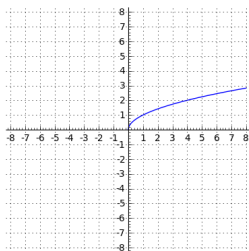
y-intercept:  $(0, 0)$  Domain:  $\{x \in \mathbb{R}\}$   
 x-intercept:  $(0, 0)$  Range:  $\{f(x) \in \mathbb{R}\}$

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Slide 5/10Reciprocal Function,  $f(x) = \frac{1}{x}$ 

y-intercept: n/a Domain:  $\{x \in \mathbb{R} \mid x \neq 0\}$   
 x-intercept: n/a Range:  $\{f(x) \in \mathbb{R} \mid f(x) \neq 0\}$

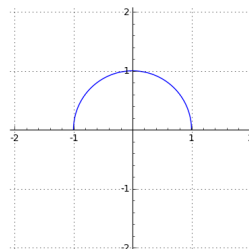
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Slide 6/10

### Square Root Function, $f(x) = \sqrt{x}$



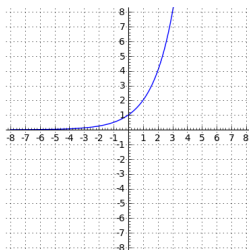
y-intercept:  $(0, 0)$  Domain:  $\{x \in R \mid x \geq 0\}$   
 x-intercept:  $(0, 0)$  Range:  $\{f(x) \in R \mid f(x) \geq 0\}$

### Semicircle Function (Upper Half, Radius 1), $f(x) = \sqrt{1 - x^2}$



y-intercept:  $(0, 1)$  Domain:  $\{x \in R \mid -1 \leq x \leq 1\}$   
 x-intercepts:  $(-1, 0), (1, 0)$  Range:  $\{f(x) \in R \mid 0 \leq f(x) \leq 1\}$

### Exponential Function (Base 2), $f(x) = 2^x$



y-intercept:  $(0, 1)$  Domain:  $\{x \in R\}$   
 x-intercept:  $n/a$  Range:  $\{f(x) \in R \mid f(x) > 0\}$

### Questions?

