

1-3: Twelve Basic Functions

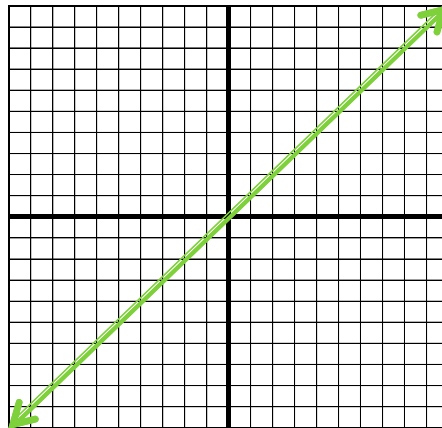
Honors Precalculus

Mr. Gallo

I. The “Terrible 12”

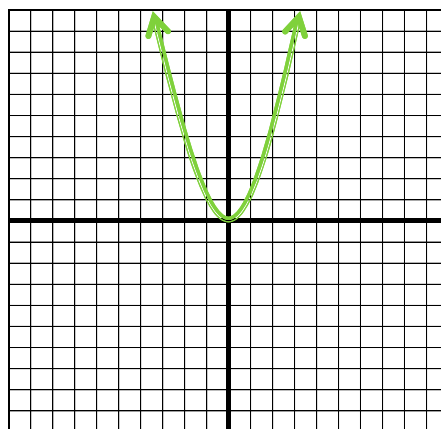
A.) The Identity Function

$$f(x) = x$$



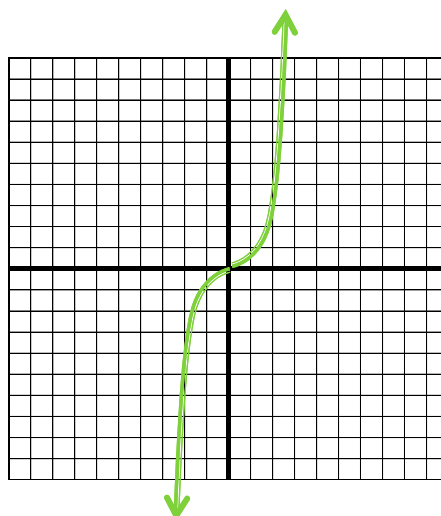
B.) The Squaring Function

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



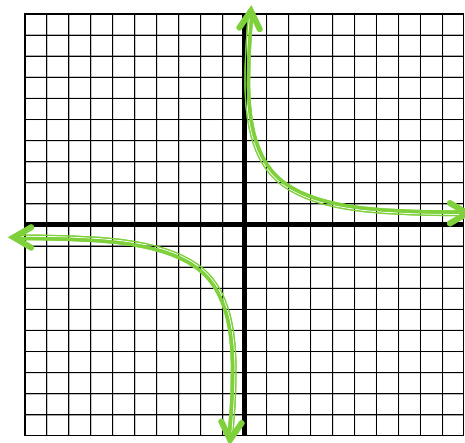
C.) The Cubing Function

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



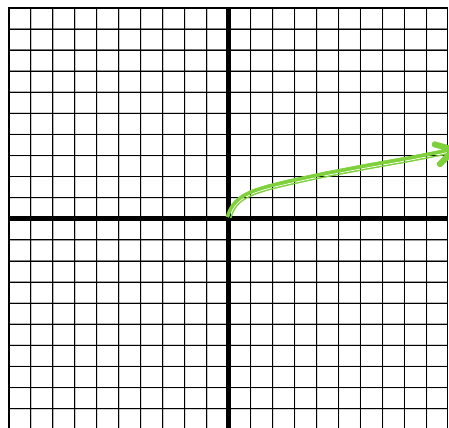
D.) The Reciprocal Function

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



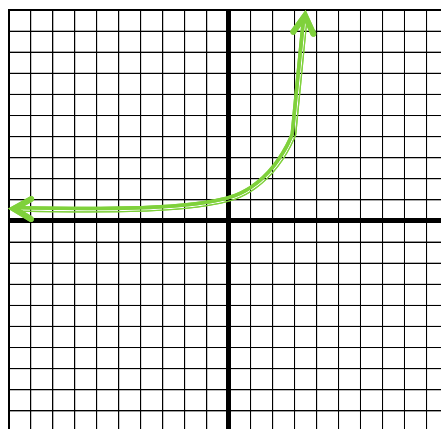
E.) The Square Root Function

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



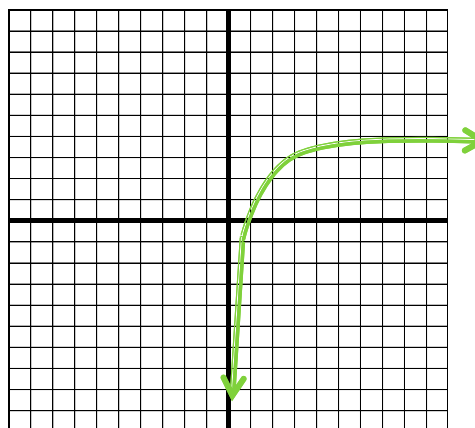
F.) The Exponential Function

$$f(x) = e^x$$



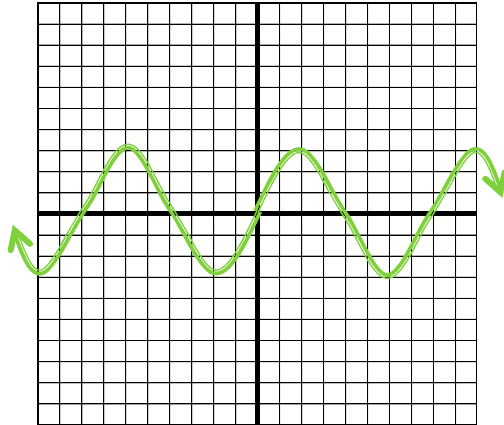
G.) The Natural Logarithm Function

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



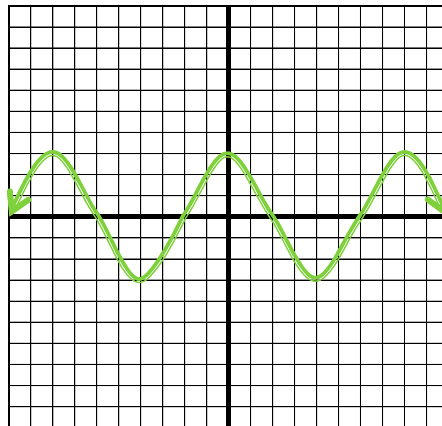
H.) The Sine Function

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



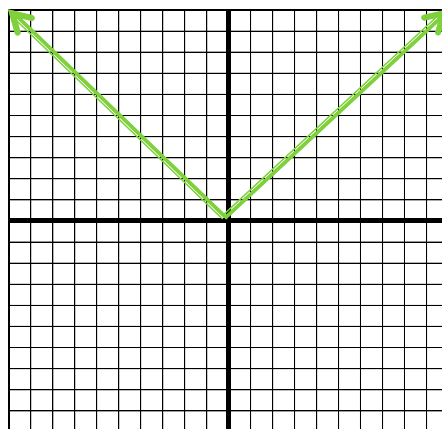
I.) The Cosine Function

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



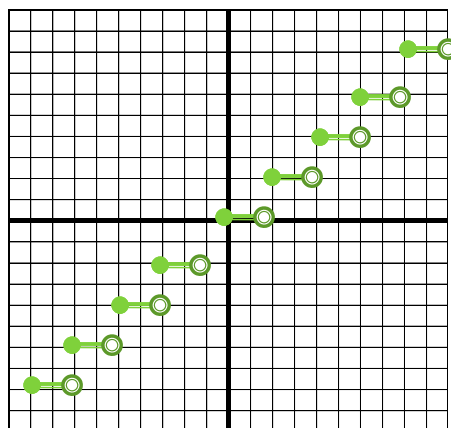
J.) The Absolute Value Function

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



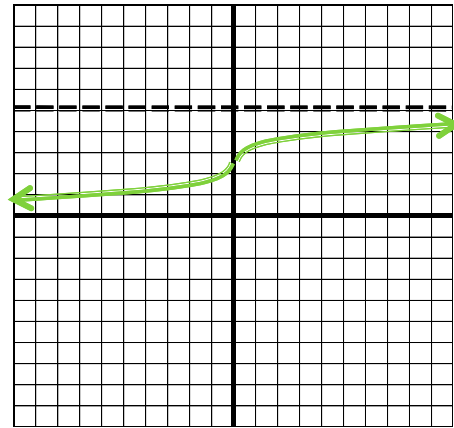
K.) The Greatest Integer Function

$$f(x) = \lfloor x \rfloor$$



L.) The Logistic Function

$$f(x) = \frac{1}{1 + e^{-x}}$$



Your Job: Determine the 10 characteristics
(Complete Analysis) of each of the 12 basic
functions.

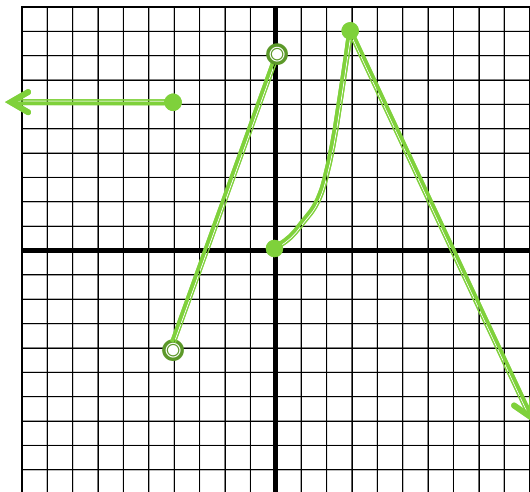
II. Piece-wise Functions

A.) Def – Functions defined on separate domains

B.) Ex. – Graph $f(x) = \begin{cases} -x+5, & x < 5 \\ x-5, & x \geq 5 \end{cases}$



B.) Ex. – Define the following function:



$$f(x) = \begin{cases} 6, & x \leq -4 \\ 3x+8, & -4 < x < 0 \\ x^2, & 0 \leq x \leq 3 \\ -\frac{9}{4}x + \frac{63}{4}, & x > 3 \end{cases}$$