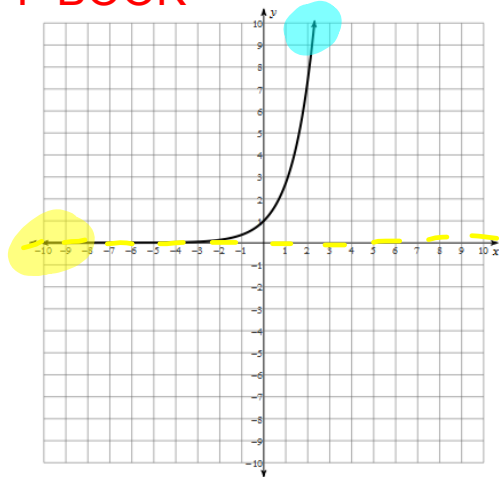
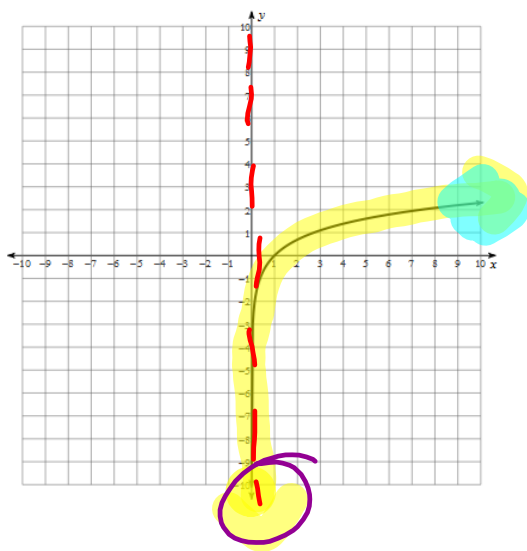


**Parent Function: "Natural" Exponential function**  
**PF BOOK**  $f(x) = e^x$



relative max: none  
 relative min: none  
 increasing intervals:  $(-\infty, \infty)$   
 decreasing intervals: none  
 domain:  $(-\infty, \infty)$   
 range:  $(0, \infty)$   
 end behavior:  $x \rightarrow \infty$   $f(x) \rightarrow \infty$   
 $x \rightarrow -\infty$   $f(x) \rightarrow 0$

**Parent Function: Natural Logarithm**  
 $f(x) = \ln x$

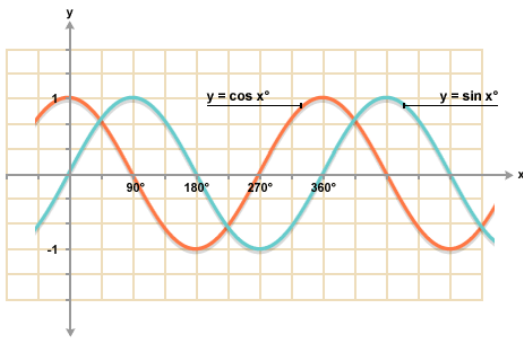


relative max: none  
 relative min: none  
 increasing intervals:  $(0, \infty)$   
 decreasing intervals: none  
 domain:  $(0, \infty)$   
 range:  $(-\infty, \infty)$   
 end behavior:  $x \rightarrow \infty$   $f(x) \rightarrow \infty$   
 $x \rightarrow -\infty$   $f(x) \rightarrow -\infty$

## Trig Functions

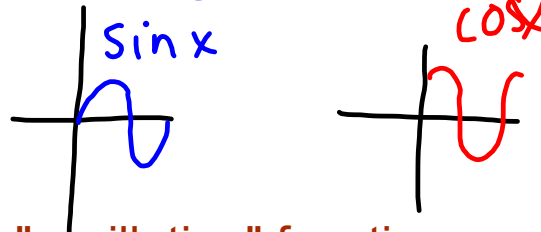
$$f(x) = \sin x$$

$$g(x) = \cos x$$



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

Range:  $[-1, 1]$



These are what's called "oscillating" functions.  
They make "waves"