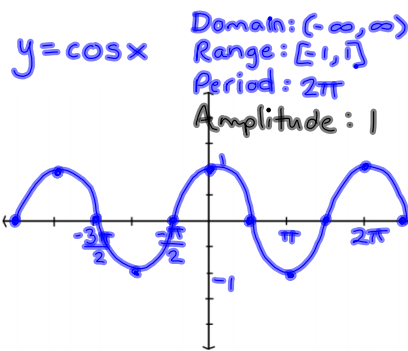
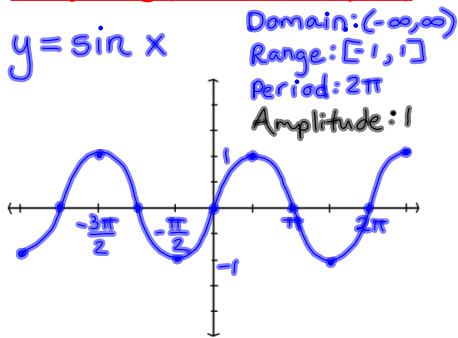


**Graphing** (5.5, 5.6 and beyond)



Recall:

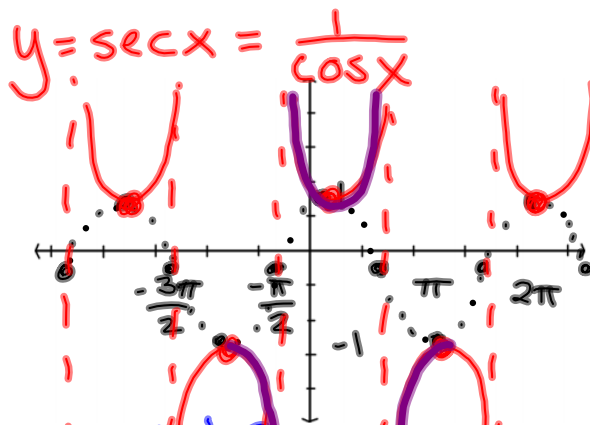
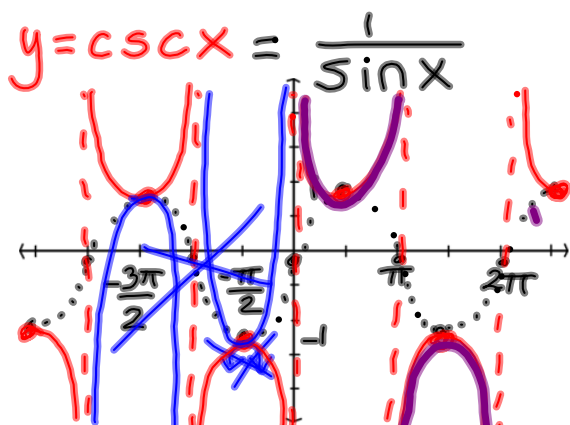
The period of a function is the smallest interval over which the function repeats itself.

New term:

Amplitude =  $\frac{\text{Max Value} - \text{Min Value}}{2}$

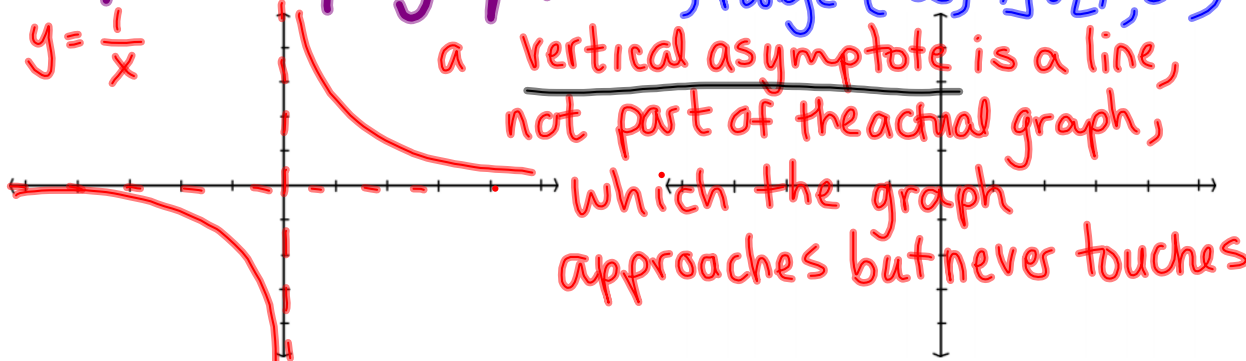
or for an unshifted sin/cos graph, the max. distance from x-axis

\*amplitude is always positive

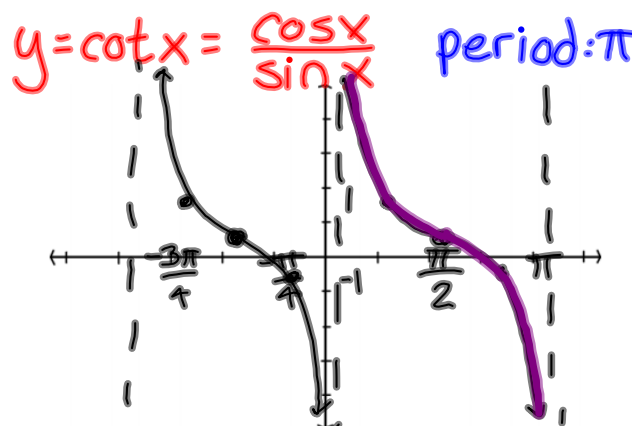
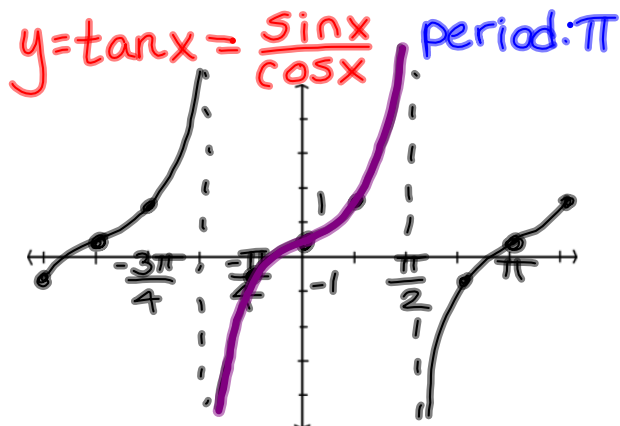


"amp" of helper graphs: 1 ; period:  $2\pi$  ; range:  $(-\infty, -1] \cup [1, \infty)$

$y = \frac{1}{x}$



a vertical asymptote is a line, not part of the actual graph, which the graph approaches but never touches



$= 0$  when  $\sin x = 0$  ( $k\pi$ 's)  
 undef. when  $\cos x = 0$  (odd  $\frac{k\pi}{2}$ 's)  
 passes through origin  
 asymptotes @ positive & negative half the period

A small sketch of the tangent function graph, showing the curve passing through the origin and approaching vertical asymptotes.

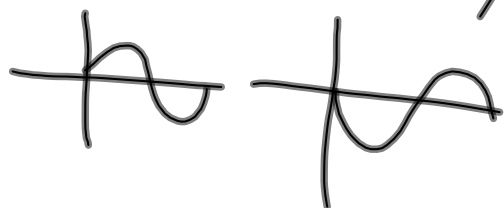
lies to right of y-axis,  
 drawn from upper left to bottom right  
 asymptotes @ zero & period

A small sketch of the cotangent function graph, showing the curve decreasing from positive infinity to negative infinity, passing through the x-axis.

$y = f(x) \rightsquigarrow y = a f(bx + c) + d$

$y = a(x-h)^2 + k$   
 parabola w/ vertex  $(h, k)$

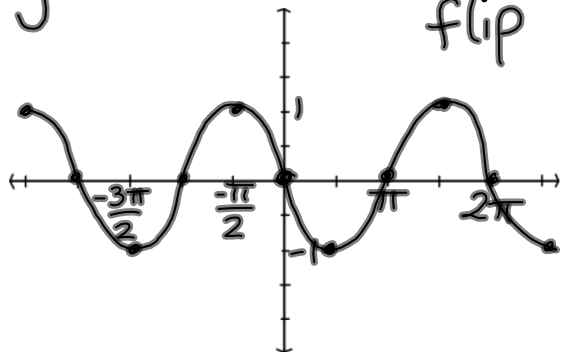
$y = -\sin x$



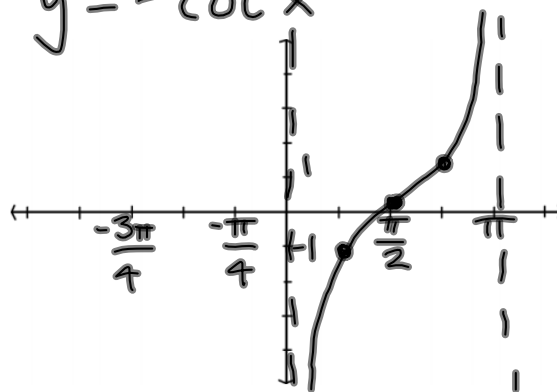
$y = x^2$  v.  $y = -(x^2)$



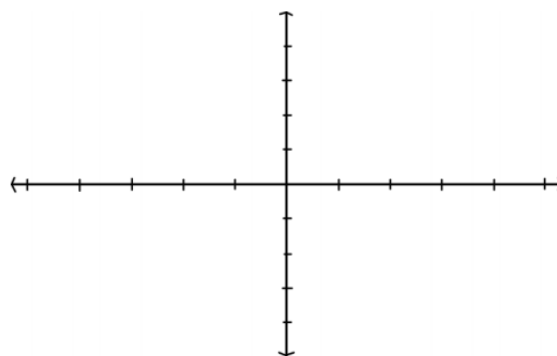
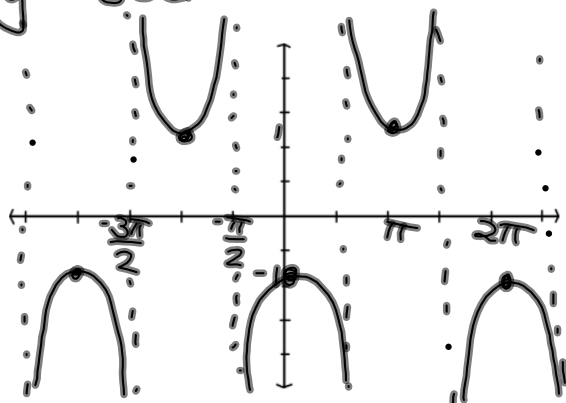
$y = -\sin x \Rightarrow$  vertical flip



$y = -\cot x$



$y = -\sec x$

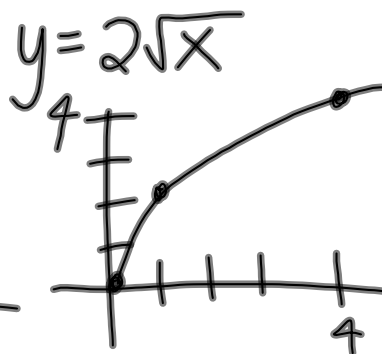
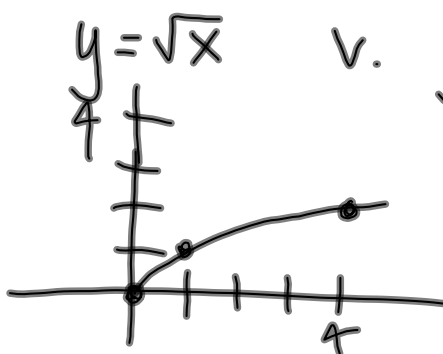
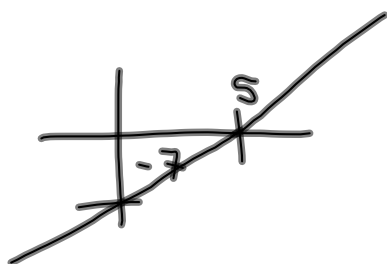


$y = a f(bx)$

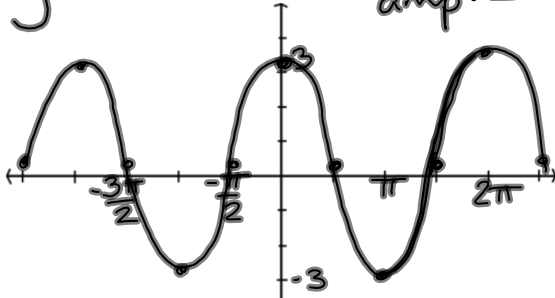
Amplitude of sin/cos

& "Amplitude" of relevant reference points for sec/csc/tan/cot

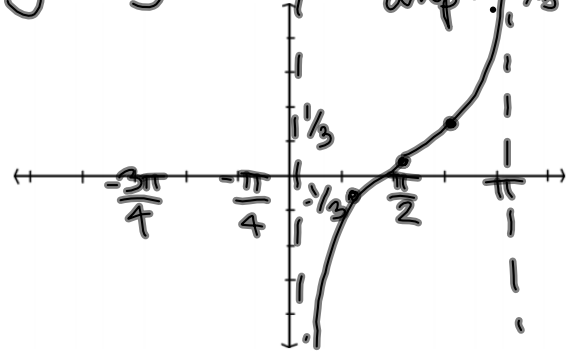
$= |a|$



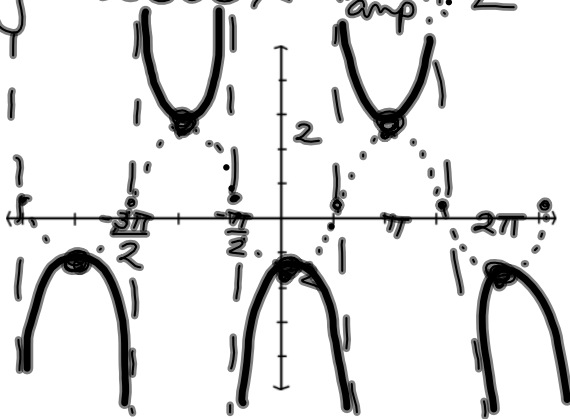
$y = 3\cos x$  per:  $2\pi$   
amp: 3



$y = -\frac{1}{3}\cot x$  per:  $\pi$   
"amp":  $\frac{1}{3}$



$y = -2\sec x$  per:  $2\pi$   
"amp": 2



Homework:

graphing worksheet  
problems #1-18

(handed out in class,  
also found on website  
under "Trigonometry")