This week:

01: **Read** sections 5.5 and 5.6 by **Monday, 29 Aug**

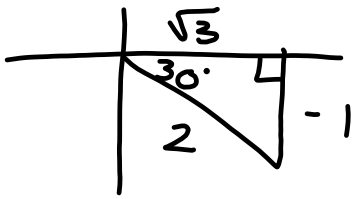
02: Complete 45 minutes of **Khan Academy** related to sections 5.1-5.6 by **Friday, 2 Sept**

03: **Textbook problems**, mostly completed in class and due **Friday, 2 Sept**

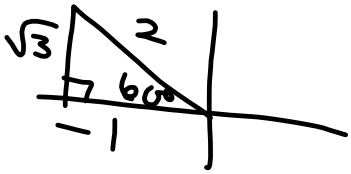
- 5.3 #69-80 all
- 5.4 #91-94 all
- 5.5 #1-45 odd
- 5.6 #1-39 odd

Test #1 - Friday, 2 September

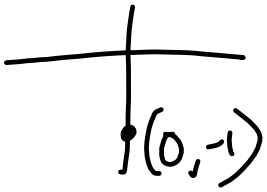
1. $\sin\left(\frac{-\pi}{6}\right) = \frac{-1}{2}$ (A)



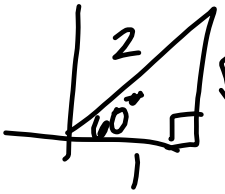
2. $\cos 120^\circ = -\frac{1}{2}$ (C)



3. $\csc\frac{3\pi}{2} = -1$ (A)



4. $\cos\theta = \frac{1}{2}$ (B)



5. 550°

-360°

190° (C)

6. $\theta = \frac{3\pi}{8}$, $r = 10\text{ft}$, $s = ?$

$s = r\theta =$

$= 10\text{ft} \cdot \frac{3\pi}{8} = \frac{30\pi}{8}\text{ ft}$

$= \frac{15\pi}{4}$ (A)

7. $r = 12\text{ in} = 1\text{ ft}$

$V = \frac{10\text{ mi}}{\text{h}}$ $\omega = ? \frac{\text{rad}}{\text{h}}$ $\frac{V}{r} = \frac{r\omega}{r}$

$\omega = \frac{V}{1} \cdot \frac{1}{r} = \frac{10\text{mi}}{\text{h}} \cdot \frac{1}{12\text{in}} \cdot \frac{12\text{in}}{1\text{ft}} \cdot \frac{5280\text{ft}}{1\text{mi}}$

$= 52800\text{ rad/h}$

Khan Academy exercises for section 5.1:

- arc measure
- arc length
- radians & degrees
- radians & arc length
- complementary & supplementary angles
- multiple units word problems
- convert units (metrics)
- convert units word problems (metrics)
- convert units (US customary)
- convert units word problems (US customary)

Khan Academy exercises for section 5.2:

- Trigonometric ratios in right triangles
- Solve for a side in right triangles
- Solve for an angle in right triangles
- Right triangle word problems

Khan Academy exercises for section 5.3-5.4:

- Trig values of special angles
- Use the Pythagorean identity

Khan Academy Exercises for 5.5-5.6:

- Midline of sinusoidal functions from graph
- Amplitude of sinusoidal functions from graph
- Period of sinusoidal functions from graph
- Midline of sinusoidal functions from equation
- Amplitude of sinusoidal functions from equation
- Period of sinusoidal functions from equation
- Graph sinusoidal functions

Graphs of the sine and cosine functions

$y=\sin x$

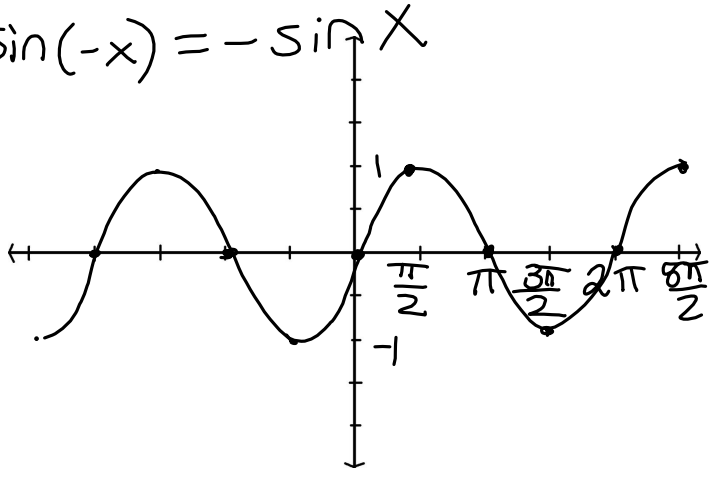
domain: $(-\infty,\infty)$

range: $[-1,1]$

period: 2π

$\sin x$ is odd

$\sin(-x) = -\sin x$



y=cosx

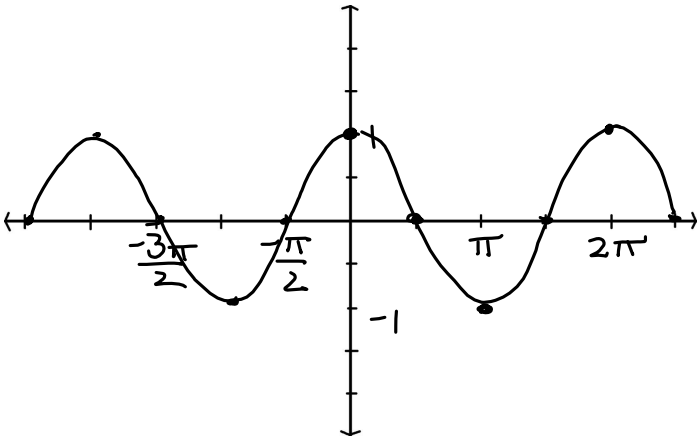
domain: $(-\infty, \infty)$

range: $[-1, 1]$

period 2π

cosx is even

$\cos(-x) = \cos x$

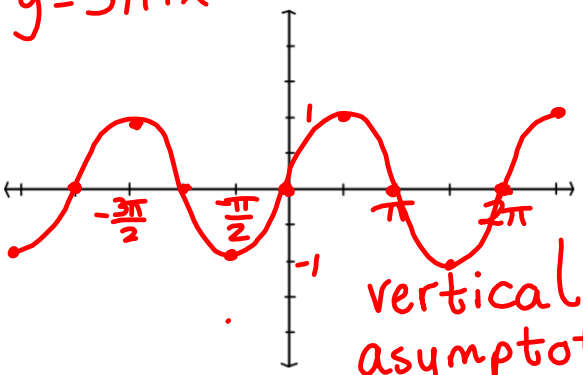


Domain/Range/Period/Graphs of the other 4 Trig functions?

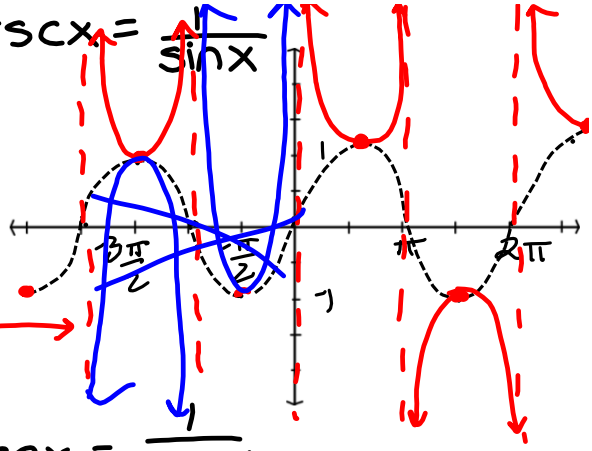
Function	Domain	Range	Period
$y = \sin x$	$(-\infty, \infty)$	$[-1,1]$	2π
$y = \cos x$	$(-\infty, \infty)$	$[-1,1]$	2π
$y = \csc x$	$\{x \mid x \text{ is not an integer multiple of } \pi\}$	$(-\infty, -1] \cup [1, \infty)$	2π
$y = \sec x$	$\left\{x \mid x \text{ is not an odd multiple of } \frac{\pi}{2}\right\}$	$(-\infty, -1] \cup [1, \infty)$	2π
$y = \tan x$	$\left\{x \mid x \text{ is not an odd multiple of } \frac{\pi}{2}\right\}$	$(-\infty, \infty)$	π
$y = \cot x$	$\{x \mid x \text{ is not an integer multiple of } \pi\}$	$(-\infty, \infty)$	π

Why?

$y = \sin x$

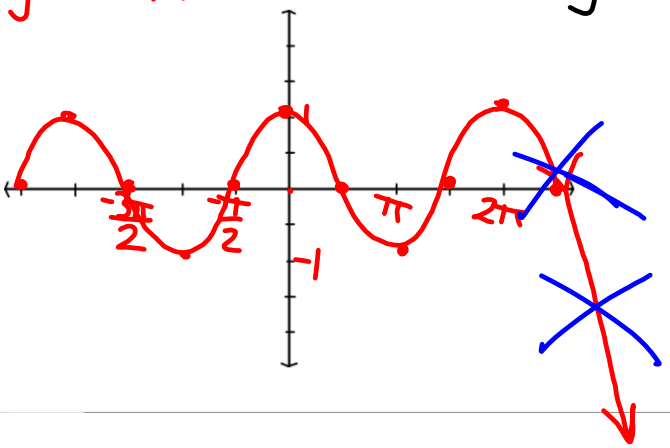


$y = \csc x = \frac{1}{\sin x}$

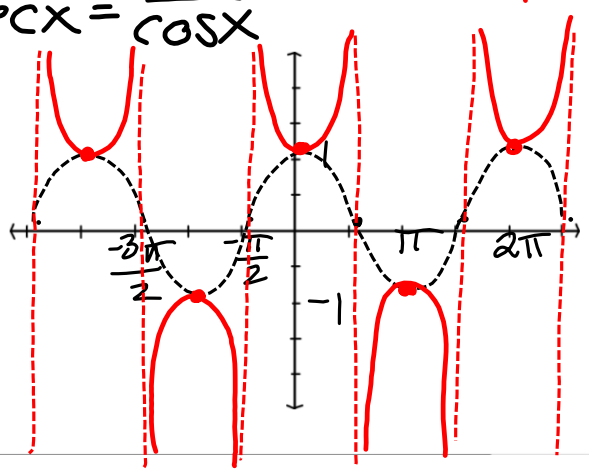


vertical asymptote

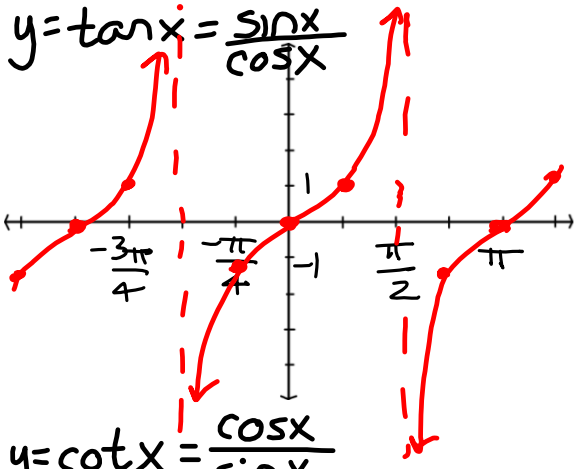
$y = \cos x$

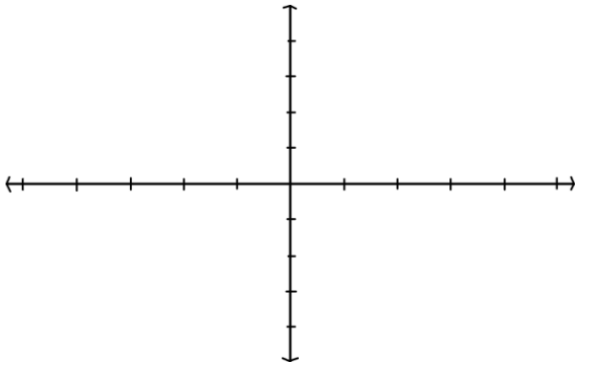


$y = \sec x = \frac{1}{\cos x}$

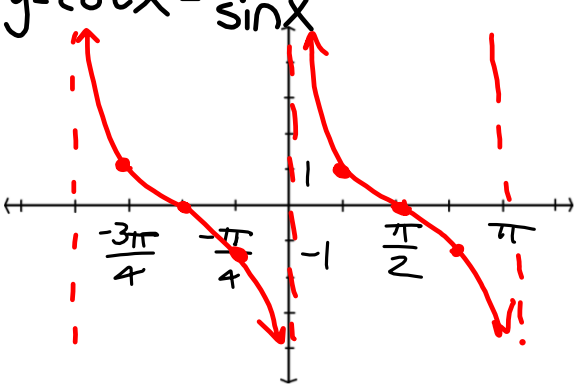


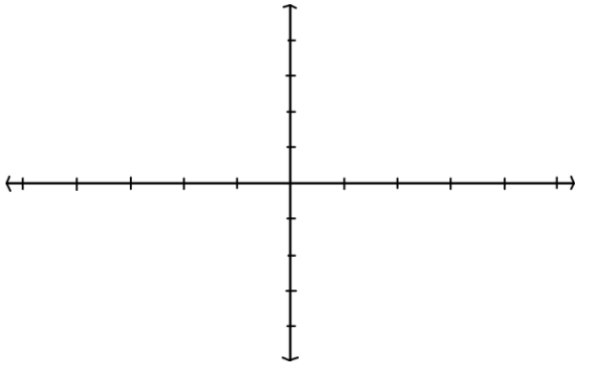
$y = \tan x = \frac{\sin x}{\cos x}$





$y = \cot x = \frac{\cos x}{\sin x}$





$y = f(x)$

Goal:

$y = af(bx+c)+d$

$y = f(x)+g(x)$

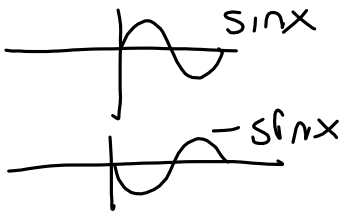
$y = af(bx)$

multiplication always results in a stretch of the graph.

constants applied outside the function affect it vertically as we expect; inside - horizontally, opposite of what we would expect

$$\text{amplitude} = \frac{\text{max value} - \text{min value}}{2}$$

for $y = a \sin bx$



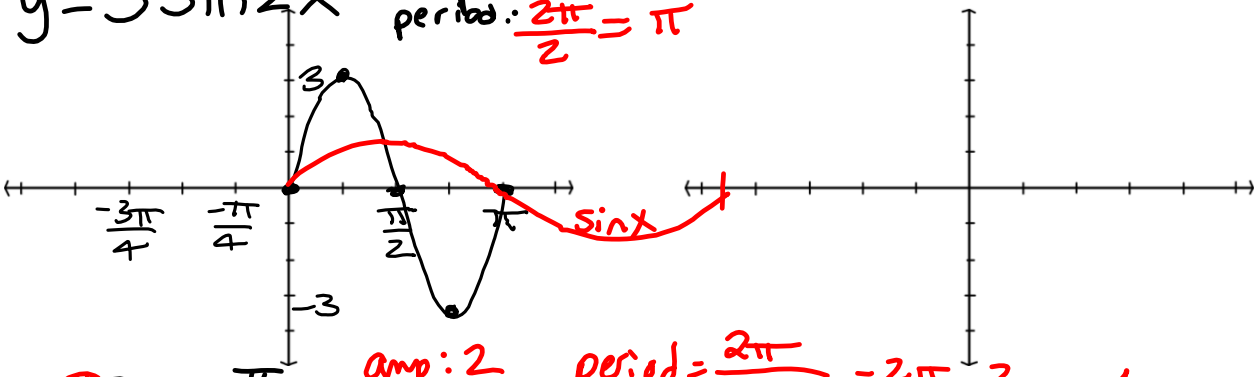
amplitude $= |a|$

If $a < 0$, vertical flip

$$\text{period} = \frac{\text{original period } (2\pi \text{ or } \pi)}{|b|}$$

If $b < 0$, horizontal flip

$y = 3 \sin 2x$ amp: 3 period: $\frac{2\pi}{2} = \pi$



$y = -2 \cos \frac{\pi}{2} x$ amp: 2 period $= \frac{2\pi}{\pi/2} = 2\pi \cdot \frac{2}{\pi} = 4$