Quiz 3 #2 : Alternate method

$$y = \frac{2+3\cos(2x-\pi)}{5}$$

Range? $\max = \frac{2+3(1)}{5} = 1$

$\min = \frac{2+3(-1)}{5} = -\frac{1}{5}$

Range $= \left[-\frac{1}{5}, 1\right]$

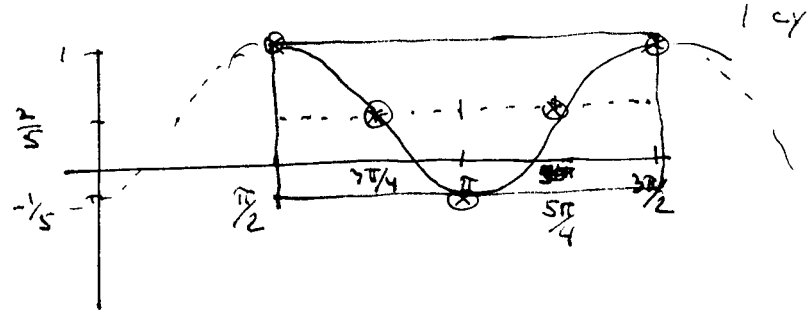
Amplitude? $\frac{\max - \min}{2} = \frac{1}{2}\left[1-\left(-\frac{1}{5}\right)\right] = \frac{3}{5}$

Mean value = vertical shift? $\frac{\max+\min}{2} = \frac{1}{2}\left[1+\left(-\frac{1}{5}\right)\right] = \frac{2}{5}$

Phase shift? Solve $2x-\pi = 0 \Rightarrow x = \frac{\pi}{2}$

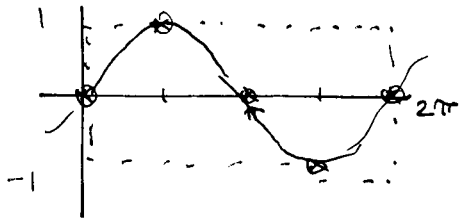
Period? Since $B=2$, period $= \frac{2\pi}{B} = \frac{2\pi}{2} = \pi$

1 cycle begins at $\pi/2$
ends at $\frac{\pi}{2}+\pi = \frac{3\pi}{2}$



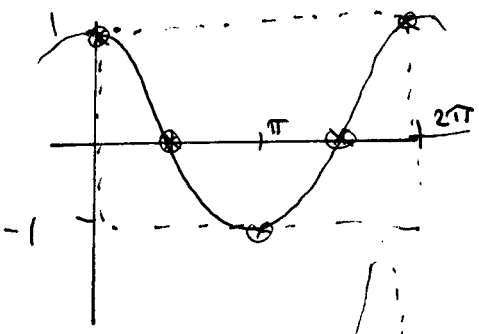
Summary of §2.1 – 2.4

Graphs of the six (standard) trig functions [See p145]



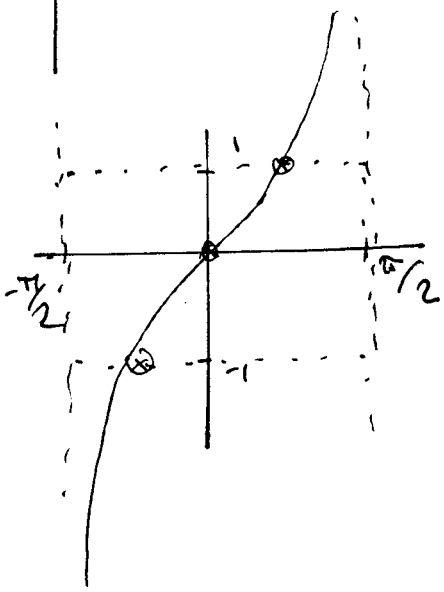
$y = \sin x$

period $= 2\pi$
amplitude $= 1$
domain $= (-\infty, \infty)$
range $= [-1, 1]$
odd function



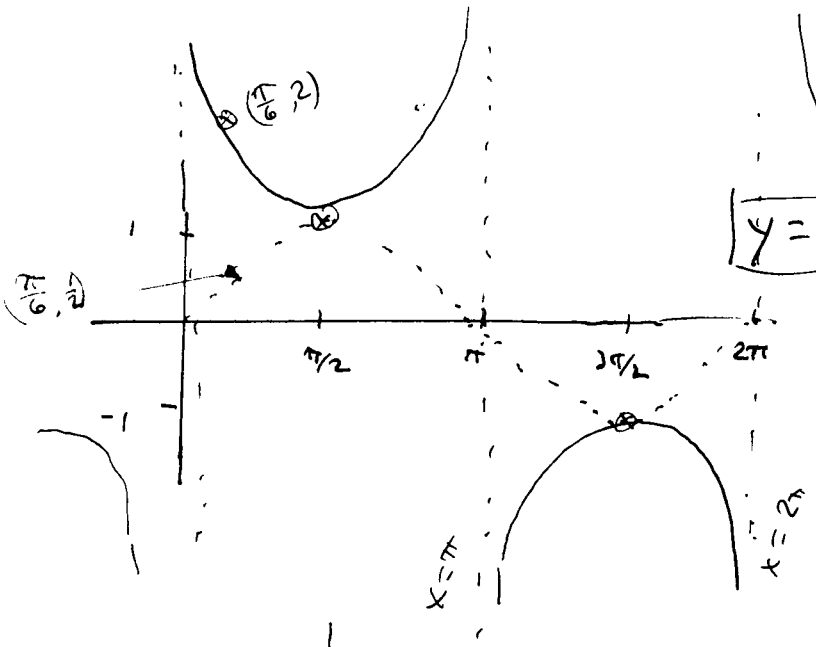
$y = \cos x$

period $= 2\pi$
amplitude $= 1$
domain $= (-\infty, \infty)$
range $= [-1, 1]$
even function



$y = \tan x$

period $= \pi$
domain = all reals <u>except</u> <u>odd</u> multiples of $\pi/2$
range = all reals
odd function
<u>increasing</u> function (on each "branch")



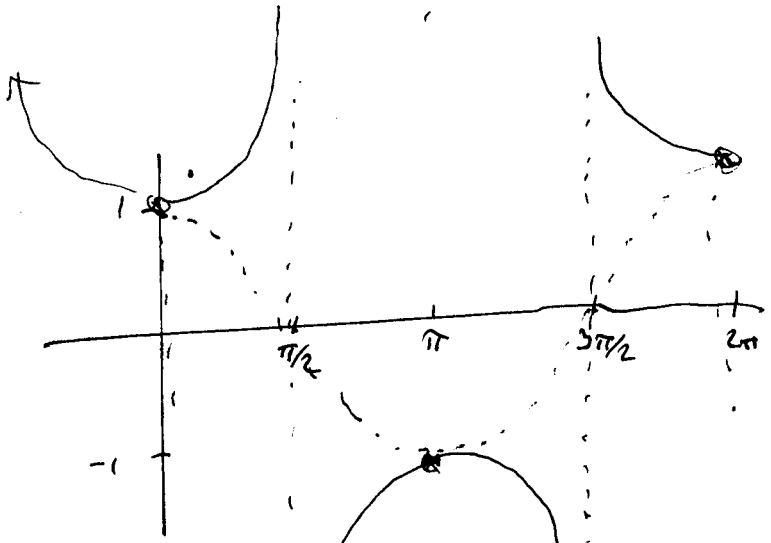
$\boxed{y = \csc x} = \frac{1}{\sin x}$

period = 2π

domain = all reals except multiples of π.

range = $(-\infty, -1] \cup [1, \infty)$

csc is an odd function.



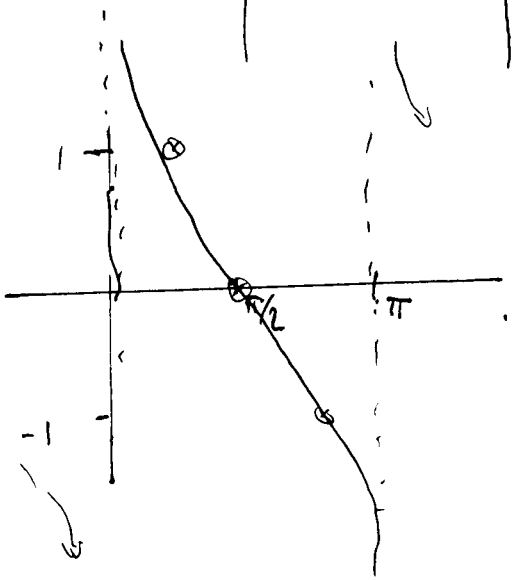
$y = \sec x = \frac{1}{\cos x}$

period = 2π

domain = all reals except odd multiples of $\pi/2$.

range = $(-\infty, -1] \cup [1, \infty)$

even function



$\boxed{y = \cot x} = \frac{1}{\tan x}$

period = π

domain = all reals except multiples of π

range = all reals

odd function

decreasing on each branch of the graph