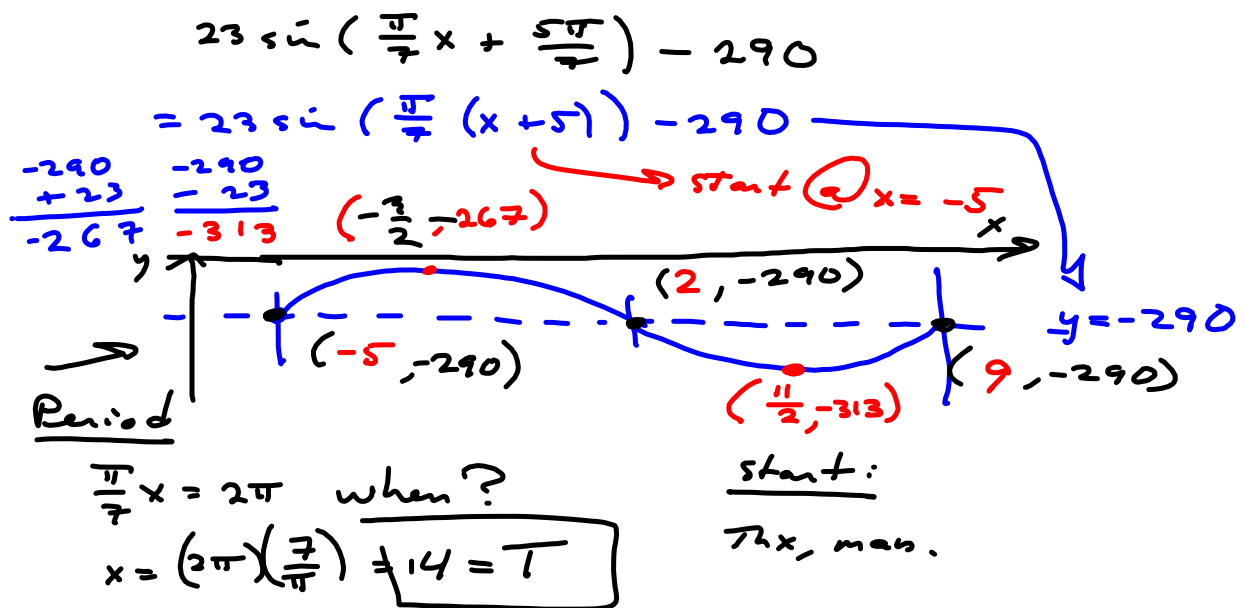
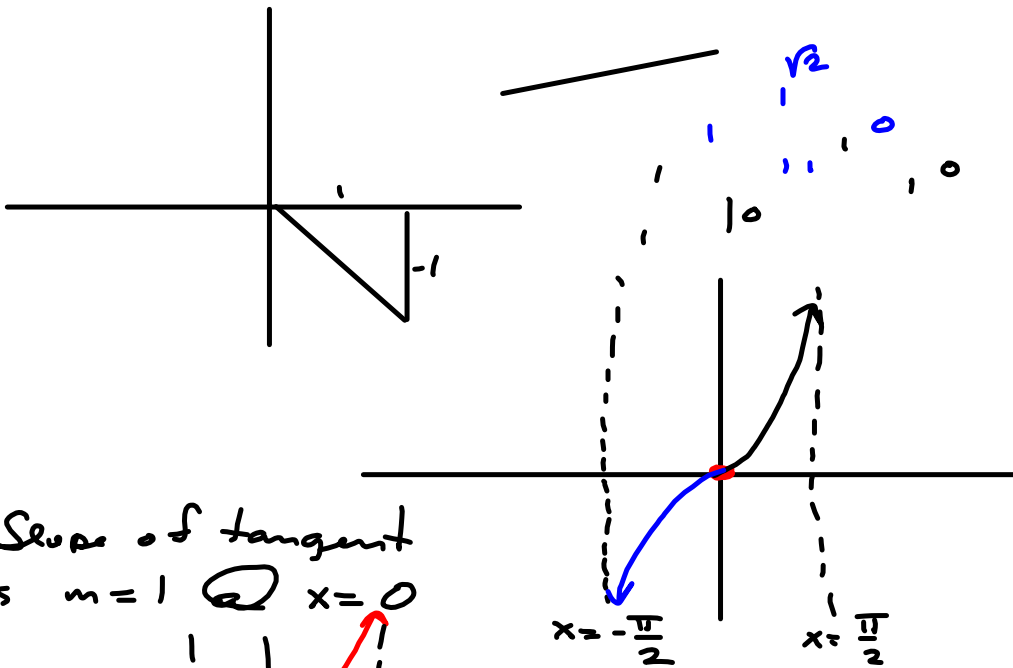


Sl.6 Assignment is posted, but the video/online concordance needs tweaking.

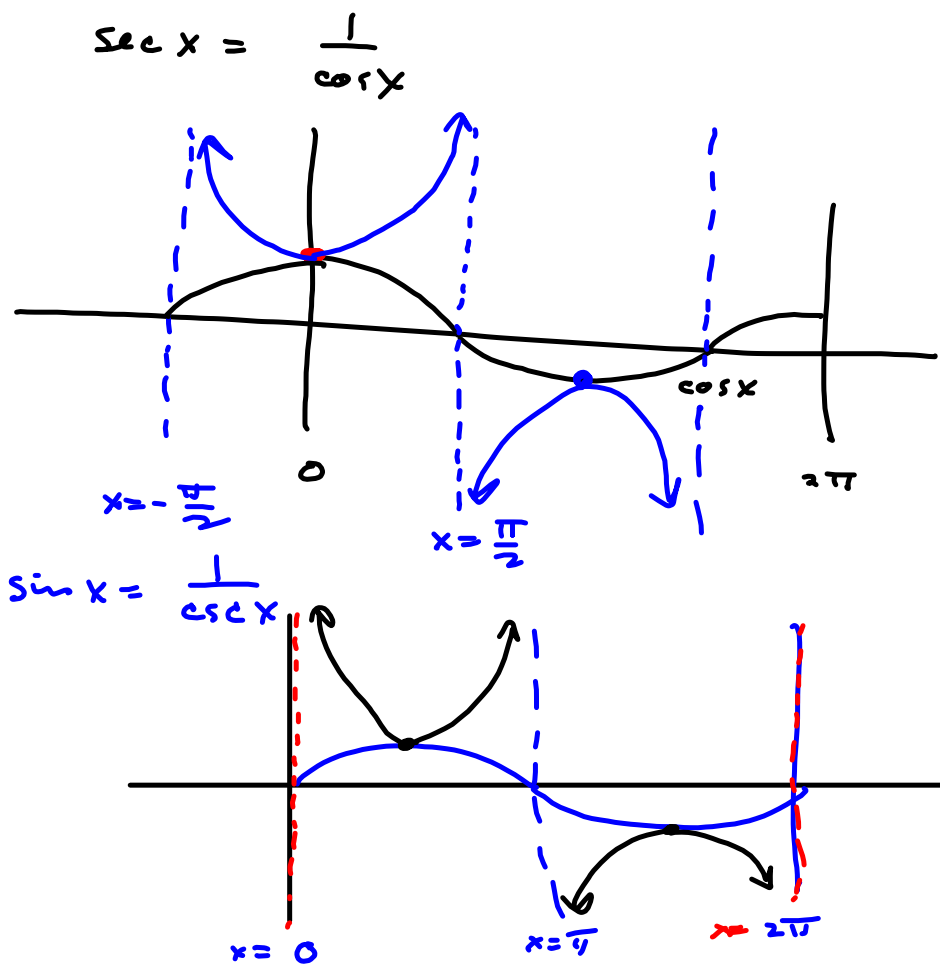
Questions?





Slope of tangent is $m=1$ @ $x=0$

Touches $y=x$ @ $x=0$, & then gets steeper.

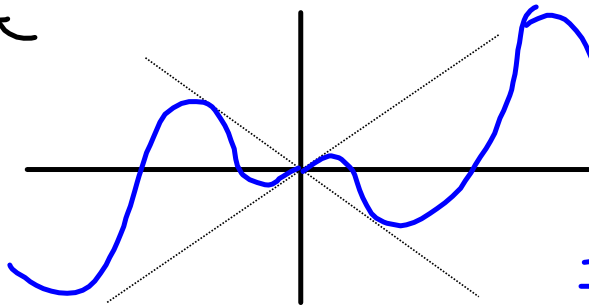
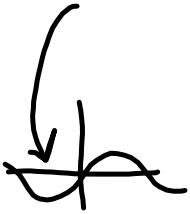


DAMPING: $x \sin x$ — Damping function

$\sin x$ oscillates between $y = \pm 1$

$x \rightarrow 0$ as, uh, $x \rightarrow 0$, so

$x \sin x \rightarrow 0$ as $x \rightarrow 0$



The idea is
it touches $y=x$
when $\sin x = 1$ &
 $y=-x$ when $\sin x = -1$.

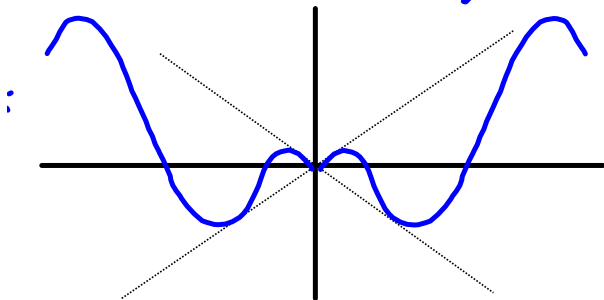
I suck @ drawing it.

$f(x) = x \sin x$ is even!

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

\sin is odd, so $\sin(-x) = -\sin x$

So I really sucked on the picture



This is $x \sin x$.
Note mirror image,
left to right.

My 1st pic was more of an $x^2 \sin x$

Think:

x^2	even	+
$\sin x$	odd	-

\uparrow \uparrow
 Even = odd
 = odd
 (For functions,
 not numbers)

$x^2 \sin x = (+)(-) = -$ means odd.

$$\left(\frac{x^2 + 2}{(\sin x)(\cos x)} \right) (\tan x)$$

$$= \left(\frac{x^2 + 2}{\sin x \cos x} \right) \left(\frac{\sin x}{\cos x} \right) = \frac{(+)(-)}{(-)(+)(+)} = +$$

is even.

$$f(-x) = \left(\frac{(-x)^2 + 2}{(\sin(-x))(\cos(-x))} \right) \left(\frac{\sin(-x)}{\cos(-x)} \right)$$

$$= \left(\frac{(x^2 + 2)}{(-\sin x)(\cos x)} \right) \left(\frac{-\sin x}{\cos x} \right)$$

$$= \frac{(x^2 + 2)(\sin x)}{(\sin x)(\cos x)(\cos x)} = f(x)$$

→ Means
 even
 function.