Worksheet #4

$$F = \frac{d}{dx}\int_{-\pi/4}^{x^2} -\sec^2 t \, dt$$

$$F' = -\sec^2 x^2 \cdot 2x$$

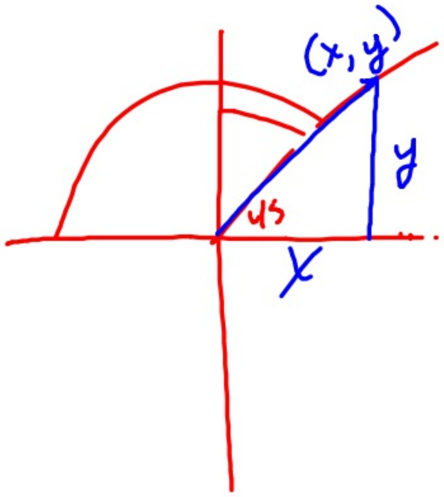
$$\boxed{-2x \cdot \sec^2 x^2}$$

Worksheet #5

$$F' = \int_0^{3x} -t^3 + 2t^2 + 3\,dt$$

$$F' = \left[-(3x)^3 + 2(3x)^2 + 3\right] \cdot 3$$

49.) $\frac{1}{\pi/2}\int_{-\pi/4}^{\pi/4} 2\sec^2 x \; dx$



$\frac{2}{\pi}\left[2 \cdot \tan x\right]_{-\pi/4}^{\pi/4}$

$\frac{2}{\pi}\left[2 \cdot \tan \frac{\pi}{4} - 2\tan\left(-\frac{\pi}{4}\right)\right]$

$\frac{2}{\pi}\left(2 + 2\right) = \frac{8}{\pi}$] avg value

$\frac{8}{\pi} = 2\sec^2 x$ ← MVTi

$\left(\frac{4}{\pi} = \sec^2 x\right)^{1/2}$

$\frac{2}{\sqrt{\pi}} = \sec x$

$\cos^{-1} \frac{\sqrt{\pi}}{2} \;\; \cos^{-1} = \cos x$

$\boxed{0.482 = x}$

Worksheet #8

$$F = \int_x^{x^2} -2\cos t \cdot dt$$

$$\begin{cases} F(x) = \int_a^x g(t)\,dt \\ \Rightarrow F'(x) = g(x) \end{cases}$$

F.T.C

$$F = \int_x^0 -2\cos t\,dt + \int_0^{x^2} -2\cos t\,dt$$

$$F = -\int_0^x -2\cos t\,dt + \int_0^{x^2} -2\cos t\,dt$$

$$-\,-2\cos x \qquad -2\cos x^2 \cdot 2x$$

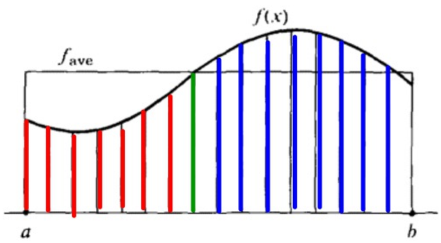
$$2\cos x - 4x \cdot \cos x^2$$

5-10 minutes to finish group work

Then we will do a gallery walk in the hallway.
Be sure to bring book with you for that!

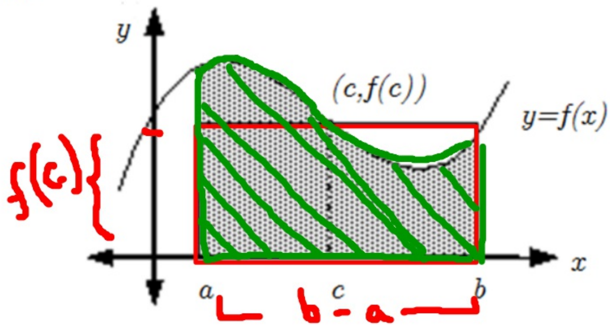
Review: Mean Value Theorem for Integrals

2 interpretations:



average value = instant value

$$\frac{1}{b-a}\int_a^b f(x)\,dx = f(c)$$



area under curve = area of rectangle

$$\int_a^b f(x)\,dx = (b-a)\cdot f(c)$$

MVTi says ***c*** between a and b MUST exist for continuous functions

Net Change: central idea is this: F(t) ppl/hr

$$f(b) = f(a) + \int_a^b f'(x)dx$$ hr

future value = Starting value + sum of all the changes

 =  + 

2003 AP Calculus Multiple Choice Test!