Monday, March 6 - Late Start

- ✧ Opener - Yellow Sheet # 1,2
- ✧ 8.2 - Area in the Y-direction, Area on the Calculator
- ✧ Practice

PLAN
(P+L)(A+N)
PA+PN+LA+LN

Your plan has been foiled

EXTRA! EXTRA! Read all about it!

AP BINDERS: We need 3-ring binders for our AP Review materials.

Required: 1.5 inch binders - must be NEW

Name, AP Calc, DiMarco, Period

Due by Tuesday, 3/14 (Pi Day)

Extra Credit: Decorate with Derivative Rules, Antiderivative Rules, etc.

(1) $f(x) = x^2 + 2 \quad g(x) = 2x + 5$

$x^2 + 2 = 2x + 5$

$x^2 - 2x - 3 = 0$

$(x+1)(x-3) = 0$

$x = -1, 3$

$$\int_{-1}^{3} \left[(2x+5) - (x^2+2)\right] dx$$

$$\int_{-1}^{3} (-x^2 + 2x + 3)\, dx$$

$$= \left[-\frac{1}{3}x^3 + x^2 + 3x\right]\Big|_{-1}^{3}$$

$$= \boxed{\frac{32}{3}}$$

(2) $\left[\frac{\pi}{4}, \frac{\pi}{2}\right]$

$\cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}$ $\quad \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$

$\cos\frac{\pi}{2} = 0$ $\quad \sin\frac{\pi}{2} = 1 \rightarrow$ on top

$$\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} (\sin x - \cos x)\, dx$$

$$= (-\cos x - \sin x)\Big|_{\frac{\pi}{4}}^{\frac{\pi}{2}} = -\cos\frac{\pi}{2} - \sin\frac{\pi}{2} - \left(-\cos\frac{\pi}{4} - \sin\frac{\pi}{4}\right)$$

$= \left(-\cos x - \sin x\right)\Big|_{\frac{\pi}{4}}$ $= -\cos\frac{\pi}{2} - \sin\frac{\pi}{2} - \left(-\cos\frac{\pi}{4} - \sin\frac{\pi}{4}\right)$

$= 0 - 1 - \left(-\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right)$

$= \boxed{-1 + \sqrt{2}}$