4. (823) $\displaystyle\int_{-\frac{\pi}{4}}^{\frac{\pi}{3}} \frac{1}{\cos^2 x}\,dx = \tan x \Big|_{-\pi/4}^{\pi/3} = \sqrt{3}+1$

11. (824) $\displaystyle\int_{0}^{\pi} \cos^2 x\,dx = \frac{1}{2}x + \frac{\sin 2x}{4}\Big|_{0}^{\pi} = \frac{1}{2}\pi$

18. (825) א.

$\underset{\text{נק' max}}{y'} = 0 = a\cos x + 2\sin 2x = a\cos x + 4\sin x\cos x = \cos x(a - 4\sin x)$

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

$a > 4$
לכן הסוגרים לא
יכולות להתאפס

$\underset{\text{נק' max}}{y} = 6 = a\cdot\sin\frac{\pi}{2} - \cos 2\cdot\frac{\pi}{2} = a+1$

$\boxed{a=5}$

ב.

$\displaystyle\int_{0}^{\frac{\pi}{2}}\left[6-(5\sin x-\cos 2x)\right]dx = 6x+5\cos x+\frac{\sin 2x}{2}\Big|_{0}^{\frac{\pi}{2}} = 3\pi-5$

23. (826) א.

$f(x) = \int f'(x)\,dx = \int(\sin x+\cos x)\,dx = -\cos x+\sin x+C$

$f(0)=0 \longrightarrow 0 = -\cos 0+\sin 0+C$

$\boxed{C=1}$

$f(x) = -\cos x+\sin x+1$

ב.

$f'(x) = 0 = \sin x+\cos x \longrightarrow \sin x = -\cos x \rightarrow -\tan x = 1$

$x = -\pi/4+\pi k$ (בדקו שהיא max) בתחום שלנו $\frac{3\pi}{4}$ והנק':

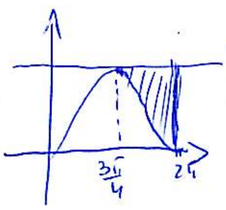
$\left(\frac{3\pi}{4}, \sqrt{2}+1\right)$

$m = f'\left(\frac{3\pi}{4}\right) = \sin\left(\frac{3\pi}{4}\right)+\cos\left(\frac{3\pi}{4}\right) = 0$

משוואת המשיק

$y = \sqrt{2}+1$

$\displaystyle\int_{\frac{3\pi}{4}}^{2\pi}\left[(\sqrt{2}+1)-(-\cos x+\sin x+1)\right]dx = x(\sqrt{2}+1)+\sin x+\cos x-x\Big|_{\frac{3\pi}{4}}^{2\pi} =$



$=(8.88+1)-(3.33)=6.55$