Cálculo II

a - $4 \operatorname{sen} \theta$

$r = 2$

$$A = \int \frac{1}{2} r^2 \, d\theta$$

$4 \operatorname{sen} \theta = 2$

$\operatorname{sen} \theta = \frac{1}{2}$ $\quad \theta = \frac{\pi}{6}$ ou $\frac{5\pi}{6}$

$$A_1 = \frac{1}{2} \int 4 (\operatorname{sen} \theta)^2 \, d\theta - \frac{1}{2} \int 2^2 \, d\theta$$

$$A_1 = \frac{(\pi - 3\sqrt{3})}{3}$$

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b · $3\cos\theta$

$r = 1 + \cos\theta$

$A = \int_a^b \frac{1}{2} r^2 d\theta$

$3\cos\theta = 1 + \cos\theta$

$2\cos\theta = 1$

$\cos\theta = \frac{1}{2} \qquad \theta = \pi/3$

$\theta = \frac{5\pi}{3}$

$A_1 = \frac{1}{2}\int_0^{\pi/3} (3\cos\theta)^2 d\theta - \frac{1}{2}\int_0^{\pi/3} (1+\cos\theta)^2 d\theta$

$A_1 = \frac{1}{2}\int_0^{\pi/3} 9\cos^2\theta\, d\theta - \frac{1}{2}\int_0^{\pi/3} 1 + 2\cos\theta + \cos^2\theta\, d\theta$

$A_1 = \frac{1}{2}\int_0^{\pi/3} 9\cos^2\theta - 1 - 2\cos\theta - \cos\theta - \cos\theta\, d\theta$

$A_1 = \frac{1}{2}\int_0^{\pi/3} 8\cos^2\theta - 1 - 2\cos\theta\, d\theta$

$A_1 = \frac{1}{2}\left[\pi + 2\operatorname{sen}\frac{2\pi}{3} - 2\operatorname{sen}\frac{\pi}{3}\right) - \left(0 + \operatorname{sen} 0 \cdot 2 - 2\operatorname{sen} 0\right)$