

Aula 21 - 16.2/3

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• Equações paramétricas:

$$x = 4 \cdot \cos(t)$$

$$y = 4 \cdot \sin(t)$$

• Intervalo $-\frac{\pi}{2} \leq t \leq \frac{\pi}{2}$

$$\cdot \int x \cdot y^4 \, ds = \int_{-\pi/2}^{\pi/2} (4 \cdot \cos(t)) \cdot (4 \cdot \sin(t))^4 \sqrt{(-4 \sin(t))^2 + (4 \cos(t))^2} \, dt \Rightarrow$$

$$\int x \cdot y^4 \, ds = \int_{-\pi/2}^{\pi/2} 4^5 \cdot \sin^4(t) \cdot \cos(t) \cdot \sqrt{16(\sin^2(t) + \cos^2(t))} \, dt$$

$$\cdot 4^6 \left[\frac{1}{5} \sin^5(t) \right]_{-\pi/2}^{\pi/2} = 4^6 \left[\frac{1}{5} \cdot 1 - \frac{1}{5} \cdot (-1) \right] = 4^6 \cdot \frac{2}{5}$$

$$\therefore \int x y^4 \, ds = 1638,4$$