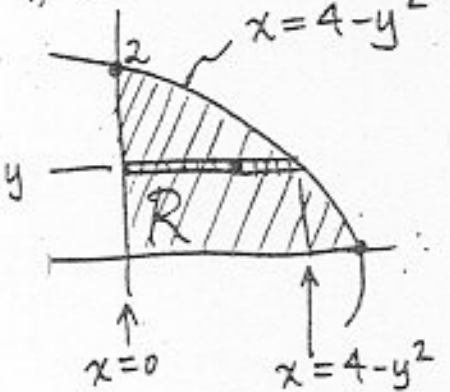
M293 FA96 P2 #4

9)



$$\text{Vol} = \iint_R \underbrace{(12-3y^2)}_{\text{height of solid}} dA$$

$$= \int_0^2 \int_0^{4-y^2} (12-3y^2)\, dx\, dy$$

$$= \int_0^2 \left[12x - 3y^2 x\right]_{x=0}^{4-y^2} dy = \int_0^2 (48 - 12y^2 - 12y^2 + 3y^4)\, dy$$

$$= 96 - 24\tfrac{2^3}{3} + 3\tfrac{2^5}{5} = \boxed{32\left(\tfrac{8}{5}\right)}$$