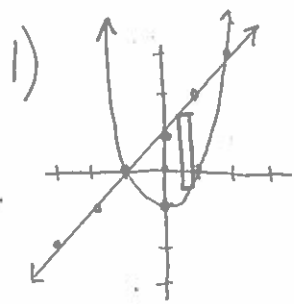


# 7.2 Volume by Cross Sections Worksheet



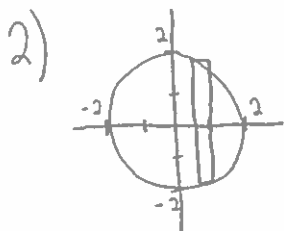
Base:  $(x+1) - (x^2-1)$   
 $-x^2 + x + 2$

a)  $\int_{-1}^2 (-x^2 + x + 2)^2 dx = 8.1$

b)  $\int_{-1}^2 (-x^2 + x + 2) \left(\frac{1}{2}x + 1\right) dx = 5.625$

c)  $\frac{\pi}{2} \int_{-1}^2 \left(\frac{-x^2 + x + 2}{2}\right)^2 dx = \frac{81\pi}{80} \approx 3.181$

d)  $\frac{\sqrt{3}}{4} \int_{-1}^2 (-x^2 + x + 2)^2 dx = 3.507$



$x^2 + y^2 = 4$

$y^2 = 4 - x^2$

$y = \pm \sqrt{4 - x^2}$

Radius:  $\sqrt{4 - x^2}$

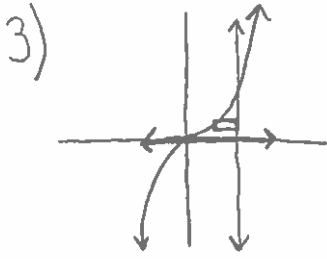
Base/Diameter:  $2\sqrt{4 - x^2}$

a)  $\int_{-2}^2 (2\sqrt{4-x^2})^2 dx = 42.\bar{6}$

b)  $\frac{1}{2} \int_{-2}^2 (2\sqrt{4-x^2})^2 dx = 21.\bar{3}$

c)  $\frac{\pi}{2} \int_{-2}^2 (\sqrt{4-x^2})^2 dx = \frac{16\pi}{3} \approx 16.755$

d)  $\frac{1}{4} \int_{-2}^2 (2\sqrt{4-x^2})^2 dx = 10.\bar{6}$



Base:  $1 - \sqrt[3]{y}$

$$a) \int_0^1 (1 - \sqrt[3]{y})^2 dy = 0.1$$

$$b) \frac{\pi}{2} \int_0^1 \left(\frac{1 - \sqrt[3]{y}}{2}\right)^2 dy = \frac{\pi}{30} \approx 0.039$$

$$c) \frac{\sqrt{3}}{4} \int_0^1 (1 - \sqrt[3]{y})^2 dy = \frac{\sqrt{3}}{40}$$

$$d) \int_0^1 (1 - \sqrt[3]{y})(3) dy = 0.75$$