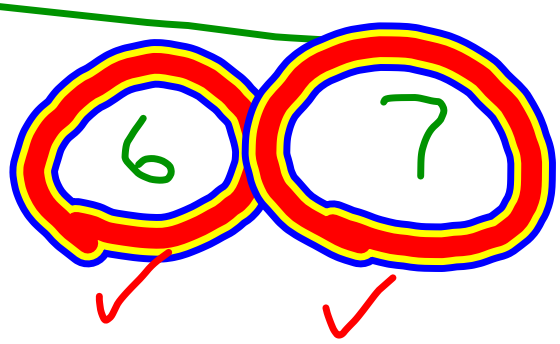
FRI 5-12-06

?

GIFT SHELL METHOD

3 4 5



4-DAY'S

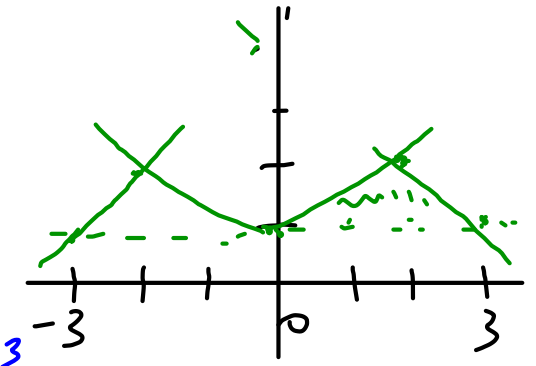
X DISC

X SHELL

Y DISC

Y SHELL

(6)



$$V(x) = \int_0^2 2\pi x \cdot \frac{1}{2}x\,dx + \int_2^3 2\pi x(3-x)\,dx$$

$$= 2\pi \int_0^2 \frac{1}{2}x^2\,dx + 2\pi \int_2^3 (3x - x^2)\,dx$$

$$= 2\pi \left[\frac{1}{6}x^3\right]_0^2 + 2\pi \left[\frac{3}{2}x^2 - \frac{1}{3}x^3\right]_2^3$$

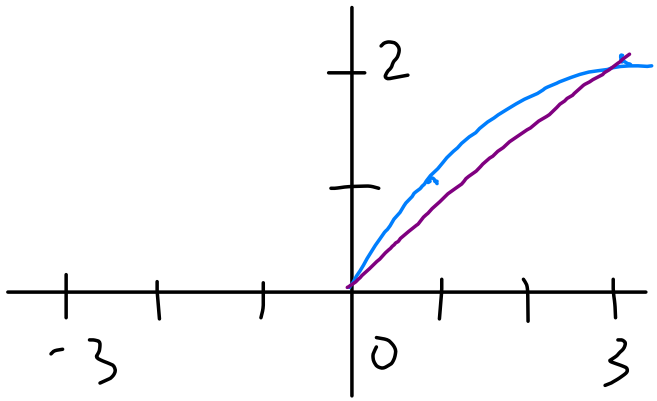
$$= 2\pi\left(\frac{4}{3}\right) + 2\pi\left[\left(\frac{27}{2} - \frac{18}{2}\right) - \left(\frac{18}{3} - \frac{8}{3}\right)\right]$$

$$= \frac{8\pi}{3} + 2\pi\left[\frac{9}{2} - \frac{10}{3}\right]$$

$$= \frac{8\pi}{3} + 2\pi\left(\frac{7}{6}\right)$$

$$= \frac{15\pi}{3} = 5\pi \text{ cubic units}$$

7



$y = \sqrt{x+1}$

$y = \frac{2}{3}x$

$$\int_0^3 2\pi x\sqrt{x+1}\,dx - \int_0^3 2\pi x \cdot \frac{2}{3}x\,dx$$

$$\frac{232\pi}{15} - 12\pi = \frac{52\pi}{15}$$