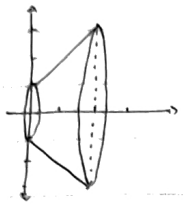
Fanny Diaz

Math Homework 5.2A

1.



$\int_0^2 \pi(x+1)^2\,dx$

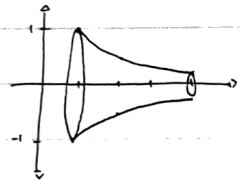
$= \pi \int_0^2 (x+1)^2\,dx$

$= \pi \int_0^2 (x^2+2x+1)\,dx$

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

$= \frac{26\pi}{3}$

2.



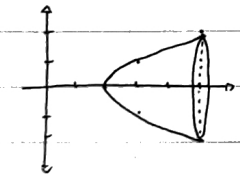
$\int_1^4 \pi\left(\frac{1}{x}\right)^2 dx$

$= \pi \int_1^4 x^{-2}\,dx$

$= \pi \left[-\frac{1}{x}\right]_1^4$

$= \frac{3\pi}{4}$

3.



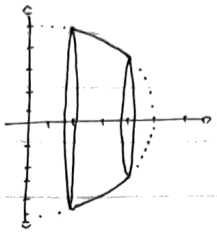
$= \int_1^5 \pi\left(\sqrt{x-1}\right)^2 dx$

$= \pi \int_1^5 (x-1)\,dx$

$= \pi \left[\frac{1}{2}x^2 - x\right]_1^5$

$= 8\pi$

4.



$\int_2^4 \pi\left(\sqrt{25-x^2}\right)^2 dx$

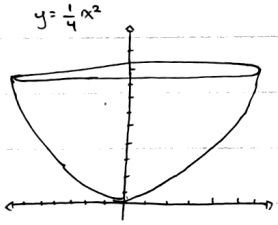
$= \pi \int_2^4 (25-x^2)\,dx$

$= \pi \left[25x - \frac{1}{3}x^3\right]_2^4$

$= \frac{94\pi}{3}$

5. $x = 2\sqrt{y}$

$y = \frac{1}{4}x^2$



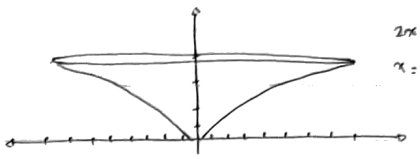
$\int_0^9 \pi(2\sqrt{y})^2\,dy$

$= \pi \int_0^9 4y\,dy$

$= \pi \left[2y^2\right]_0^9$

$= 162\pi$

6.



$\int_0^4 \pi\left(\frac{1}{2}y^2\right)^2 dy$

$= \pi \int_0^4 \frac{1}{4}y^4\,dy$

$= \frac{\pi}{4} \int_0^4 y^4\,dy$

$= \frac{\pi}{4}\left[\frac{1}{5}y^5\right]_0^4$

$= \frac{256\pi}{5}$