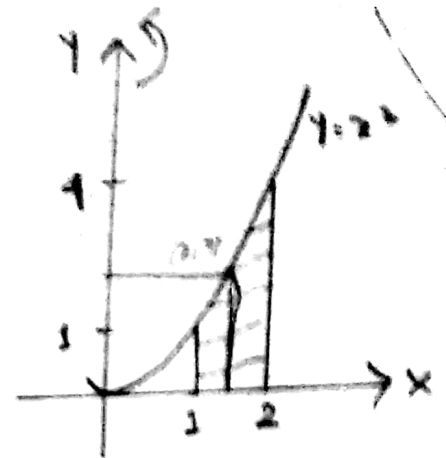
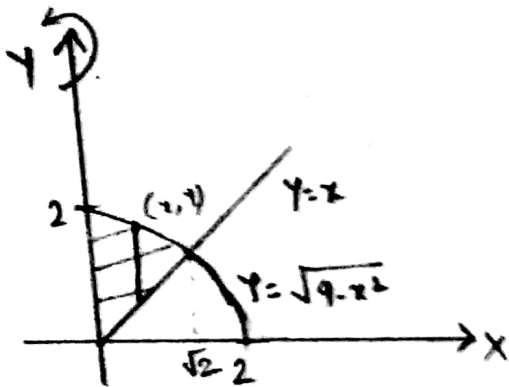


Exercise 6.3

$$1. V = \int_1^2 2\pi x x^2 dx = \frac{16\pi}{2}$$



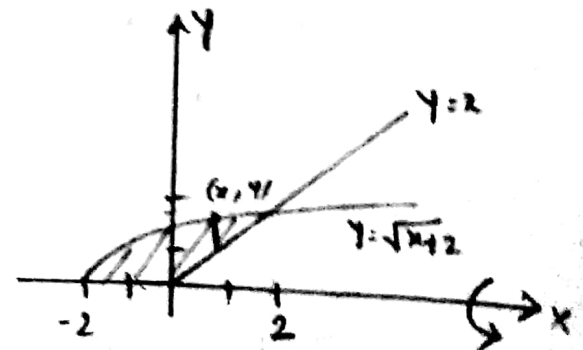
$$2. V = \int_0^{\sqrt{2}} 2\pi x (\sqrt{4-x^2} - x) dx$$

$$= \frac{8\pi}{3} (2 - \sqrt{2})$$

$$4. V = \int_0^2 2\pi y [1 - (y^2 - 2)] dy$$

$$= 2\pi \int_0^2 (y^2 - y^3 + 2y) dy$$

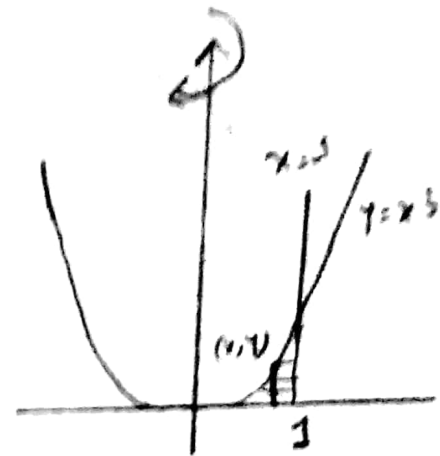
$$= \frac{16\pi}{3}$$



5. $y = x^3$, $x = 1$, $y = 0$ revolved about y axis

$$V = \int_0^1 2\pi x \cdot x^3 dx = 2\pi \int_0^1 x^4 dx$$

$$= \frac{2\pi}{5}$$

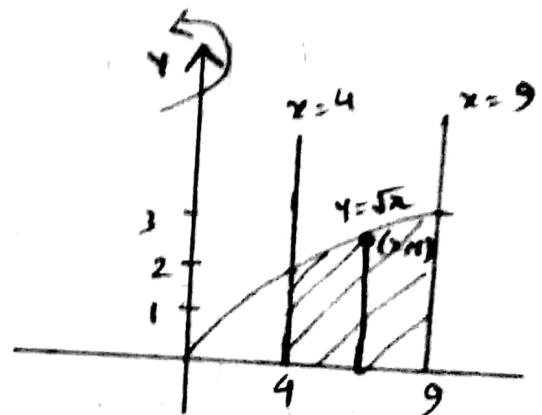


6. $y = \sqrt{x}$, $x = 4$, $x = 9$, $y = 0$

Revolved about y axis

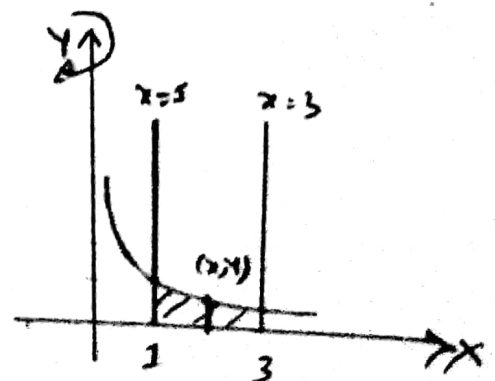
$$V = \int_4^9 2\pi x \sqrt{x} dx = 2\pi \int_4^9 x^{3/2} dx$$

$$= \frac{844\pi}{5}$$



7. $y = \frac{1}{x}$, $y = 0$, $x = 1$, $x = 3$ revolved about y axis

$$V = \int_1^3 2\pi x \cdot \frac{1}{x} dx = 4\pi$$

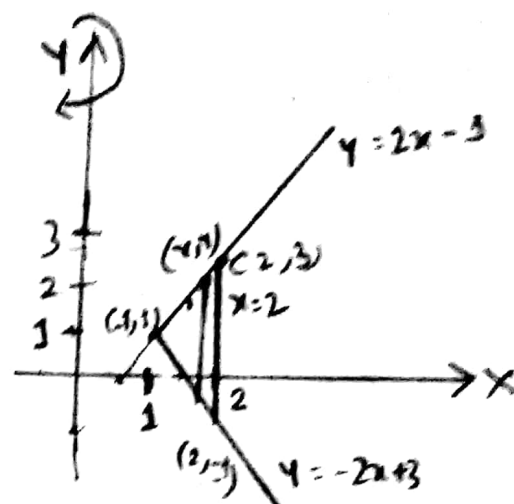


9. $y=2x-1$, $y=-2x+3$, $x=2$ revolved about y axis

$$V = \int_1^2 2\pi x [(2x-1) - (-2x+3)] dx$$

$$= 8\pi \int_1^2 (x^2 - x) dx$$

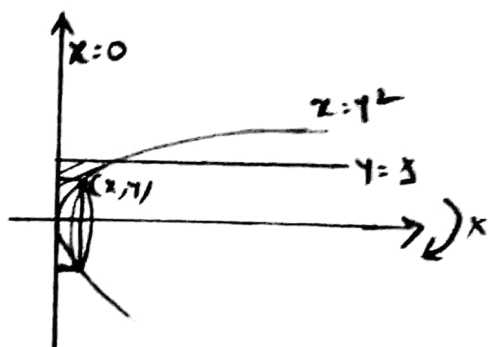
$$= \frac{20\pi}{3}$$



13. $y^2=x$, $y=3$, $x=0$ revolved about x axis

$$V = \int_0^1 2\pi y \times y^2 dy$$

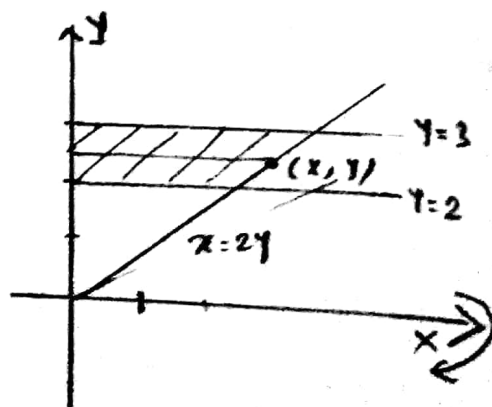
$$= \frac{\pi}{2}$$



14. $x=2y$, $y=2$, $y=3$, $x=0$ revolved about x axis

$$V = \int_2^3 2\pi y \times 2y dy$$

$$= 4\pi \int_2^3 y^2 dy = \frac{76\pi}{3}$$

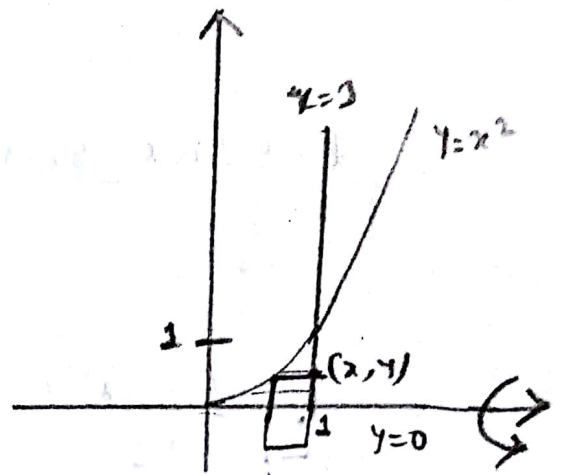


15. $y = x^2$, $x = 1$, $y = 0$ revolved about x axis

$$V = \int_0^1 2\pi y (1 - \sqrt{y}) dy$$

$$= 2\pi \int_0^1 (y - y^{3/2}) dy$$

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



27.