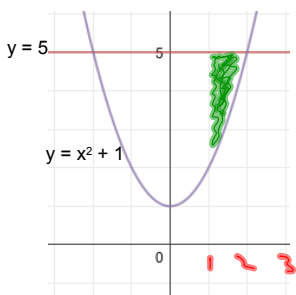


7.2 Day 2

Ex 1)



Find the shaded area.

$$\int_{-1}^2 (5 - (x^2 + 1)) dx$$

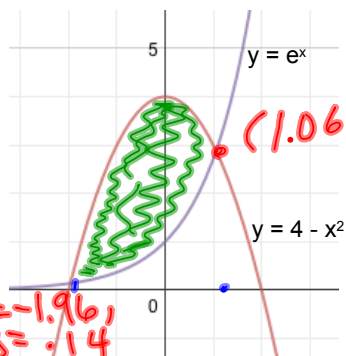
$$\int_{-1}^2 (4 - x^2) dx$$

$$= 4x - \frac{x^3}{3} \Big|_{-1}^2$$

$$= \left(8 - \frac{8}{3}\right) - \left(4 - \frac{1}{3}\right)$$

$$= 4 - \frac{7}{3} = \frac{12}{3} - \frac{7}{3} = \frac{5}{3}$$

Ex 2)



Find the area between the curves.

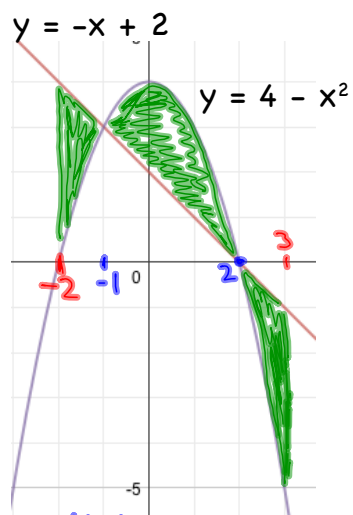
$x = -1.96, y = .14$

$e^x = 4 - x^2$

$$\int_{-1.96}^{1.06} (4 - x^2 - e^x) dx$$

$$= 6.42$$

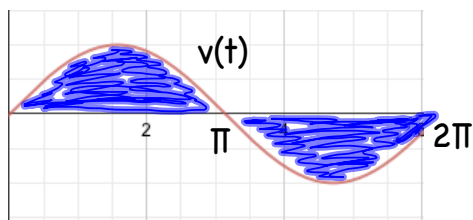
Ex 3) Find the total shaded area.



$$\begin{aligned} -x+2 &= 4-x^2 \\ x^2-x-2 &= 0 \quad (x+1)(x-2)=0 \\ x &= -1 \quad x=2 \end{aligned}$$

$$\begin{aligned} & \int_{-2}^{-1} (-x+2) - (4-x^2) dx + \int_{-1}^2 ((4-x^2) - (-x+2)) dx \\ & + \int_2^3 (-x+2) - (4-x^2) dx \\ &= \int_{-2}^{-1} (x^2-x-2) dx + \int_{-1}^2 (-x^2+x+2) dx \\ & + \int_2^3 (x^2-x-2) dx \\ &= \boxed{8\frac{1}{6}} \end{aligned}$$

Ex 4)



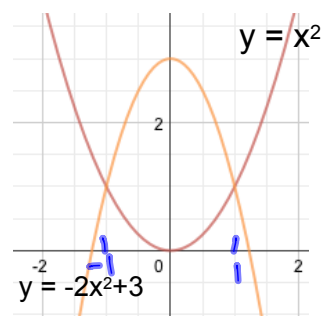
Find total shaded area.

$$\begin{aligned} & \int_0^{2\pi} |v(t)| dt \\ \text{OR} & \int_0^{\pi} v(t) dt + \left| \int_{\pi}^{2\pi} v(t) dt \right| \end{aligned}$$

Ex 5) Find the area between the curves.

$$x - y^2 = 0 \text{ and } x + 2y^2 = 3$$

$$\begin{array}{l|l} y - x^2 = 0 & y + 2x^2 = 3 \\ y = x^2 & y = 3 - 2x^2 \end{array}$$



$$= \int_{-1}^1 ((-2x^2 + 3) - x^2) dx$$

$$= \int_{-1}^1 (-3x^2 + 3) dx = \boxed{4}$$

$$x^2 = 3 - 2x^2$$

$$3x^2 = 3$$

$$x^2 = 1$$

$$x = \pm 1$$