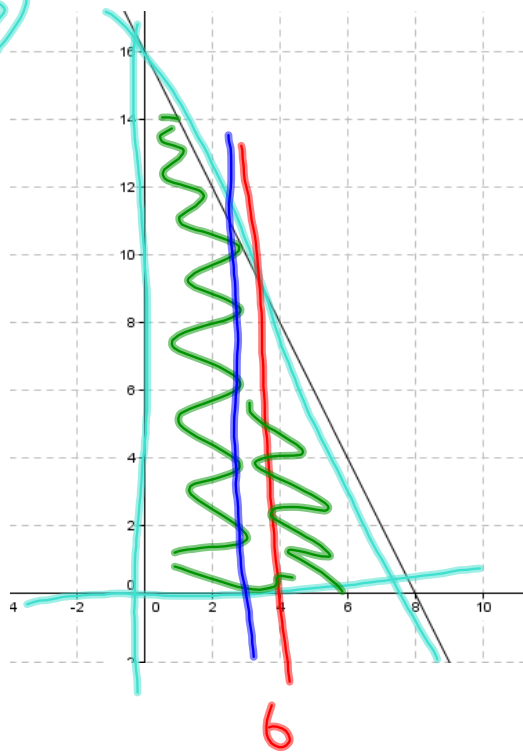


13)



$$\int_0^b (16 - 2x) dx = \int_b^8 (16 - 2x) dx$$

$$16x - x^2 \Big|_0^b = 16x - x^2 \Big|_b^8$$

$$16(b) - b^2 = 16(8) - 64 - (16b - b^2)$$

$$16(b) - b^2 = 128 - 64 - (16b - b^2)$$

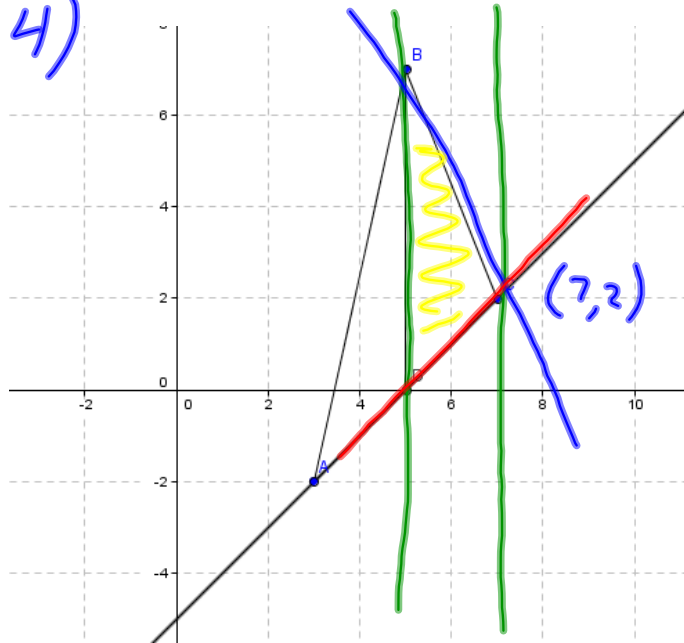
$$= 64 - 16b + b^2$$

$$0 = 64 - 32b + 2b^2$$

$$0 = b^2 - 16b + 32$$

$$b = 2.343$$

14)



$$\int_3^5 (4.5x - \frac{31}{2}) - (x - 5)$$

$$\int_5^7 (-2.5x + \frac{39}{2}) - (x - 5)$$

1) b

$$f(x) = \cos x dx \quad \left[0, \frac{\pi}{2}\right]$$

$$\frac{\int_0^{\pi/2} \cos x dx}{\pi/2 - 0}$$

$$= \frac{\sin x \Big|_0^{\pi/2}}{\pi/2}$$

$$= \frac{1-0}{\pi/2} = \frac{2}{\pi}$$

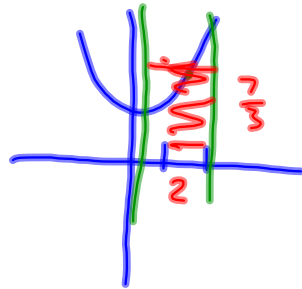
$$(c, f(c))$$

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

$$f(c)$$

$$f(x) = x^2 + 1$$

$$[0, 2]$$



$$\frac{\int_0^2 (x^2 + 1) dx}{2 - 0} = \frac{\left[\frac{x^3}{3} + x \right]_0^2}{2} = \frac{\frac{8}{3} + 2 - 0}{2}$$

$$= \frac{\frac{14}{3}}{2} = \frac{7}{3}$$

$$x^2 + 1 = \frac{7}{3}$$

$$x^2 = \frac{4}{3}$$

$$x = \sqrt{\frac{4}{3}}$$

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

$$\left(\frac{2}{\sqrt{3}}, \frac{7}{3} \right)$$

$$\frac{7}{3} \cdot 2 = \frac{14}{3}$$

$$\begin{aligned} \text{6d)} \quad f(x) &= \int_4^{x^2} \cos(t^2) dt \\ &= \sin t^2 \Big|_4^{x^2} \\ &= \sin(x^2)^2 - \sin(4)^2 \\ &= 2x \cos(x^4) \end{aligned}$$

Test next Wednesday over Average Value, Area between curves, and other various topics such as velocity, limits, etc.

Review is available on Weebly.