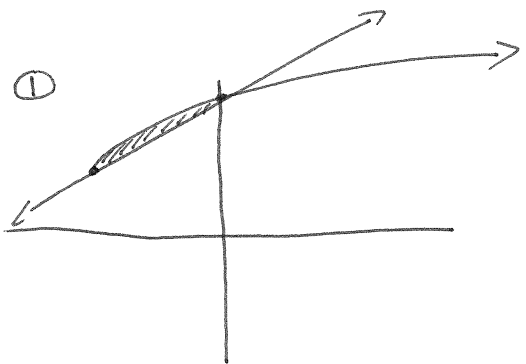


Quiz review
ABTC answers



Bounds:

$$\frac{3 + \sqrt{x+4}}{-3} = \frac{\frac{1}{2}x + 5}{-3}$$

$$\sqrt{x+4} = \frac{1}{2}x + 2$$

$$2\sqrt{x+4} = x + 4$$

$$4(x+4) = x^2 + 8x + 16$$

$$\begin{array}{r} -4x - 16 \\ \hline -4x - 16 \end{array}$$

$$x^2 + 4x = 0$$

$$x(x+4) = 0$$

$$x = 0, -4$$

$$A = \int_{-4}^0 (3 + \sqrt{x+4}) - (\frac{1}{2}x + 5) dx$$

$$= \int_{-4}^0 (\sqrt{x+4} - \frac{1}{2}x - 2) dx$$

$$\frac{2}{3}(x+4)^{\frac{3}{2}} - \frac{1}{4}x^2 - 2x \Big|_{-4}^0$$

$$\left(\frac{2}{3}(0+4)^{\frac{3}{2}} - \frac{1}{4}(0)^2 - 2(0) \right) - \left(\frac{2}{3}(-4+4)^{\frac{3}{2}} - \frac{1}{4}(-4)^2 - 2(-4) \right)$$

$$\frac{16}{3} - 0 - 0 - [0 - 4 + 8]$$

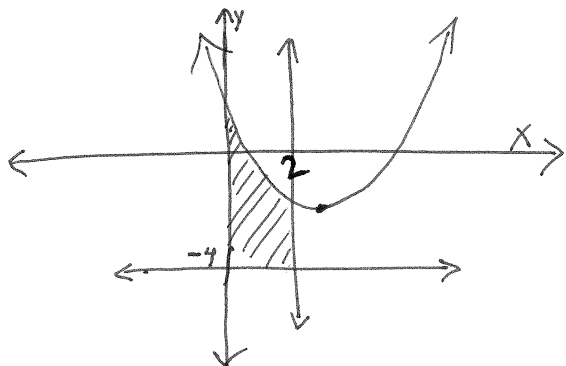
$$\frac{16}{3} - \frac{12}{3} =$$

$$\boxed{\frac{4}{3} u^2}$$

②

$$X = \frac{6}{2} = 3$$

$$Y = 3^2 - 6(3) + 7 = -2$$



$$A = \int_0^2 ((x^2 - 6x + 7) - (-4)) dx$$

$$= \int_0^2 (x^2 - 6x + 11) dx$$

$$\left. \frac{1}{3}x^3 - 3x^2 + 11x \right|_0^2$$

$$\left(\frac{1}{3}(2)^3 - 3(2)^2 + 11(2) \right) - (0)$$

$$\frac{8}{3} - 12 + 22$$

$$\frac{8}{3} + \frac{30}{3} =$$

$$\boxed{\frac{38}{3} \text{ u}^2}$$

③ Bounds:

$$2y^2 + 5y - 3 = y^2 + 11$$

$$y^2 + 5y - 14 = 0$$

$$(y + 7)(y - 2) = 0$$

$$y = -7, 2$$

$$f(0) = -3 \leftarrow \text{lower}$$

$$h(0) = 11 \leftarrow \text{upper}$$

$$A = \int_{-7}^2 ((y^2 + 11) - (2y^2 + 5y - 3)) dy$$

$$\boxed{A = \int_{-7}^2 (-y^2 - 5y + 14) dy}$$

④ Bounds :

$$x^3 + 3x^2 - 5x = 4x^2 - 3x$$

$$x^3 - x^2 - 2x = 0$$

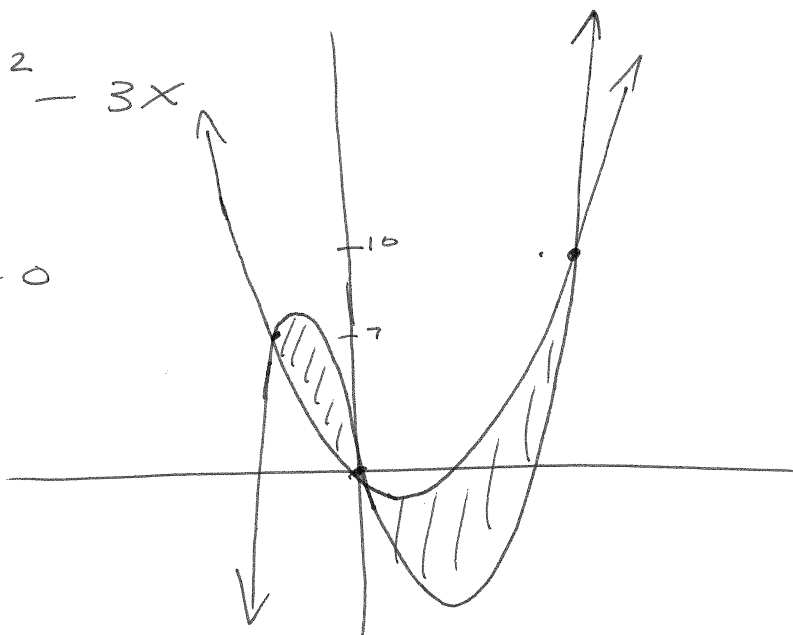
$$x(x+1)(x-2) = 0$$

$$x = -1, 0, 2$$

$$g(-1) = 7$$

$$g(0) = 0$$

$$g(2) = 10$$



$$A = \int_{-1}^0 (f(x) - g(x)) dx + \int_0^2 (g(x) - f(x)) dx$$

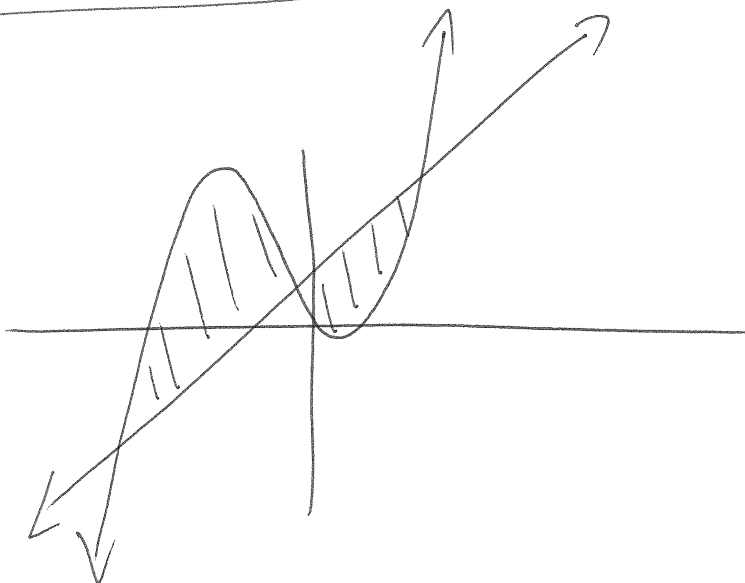
⑤ Bounds :

$$f(x) = g(x)$$

$$x = -4.8595$$

$$x = -.5741$$

$$x = 1.4337$$



$$1.4337$$

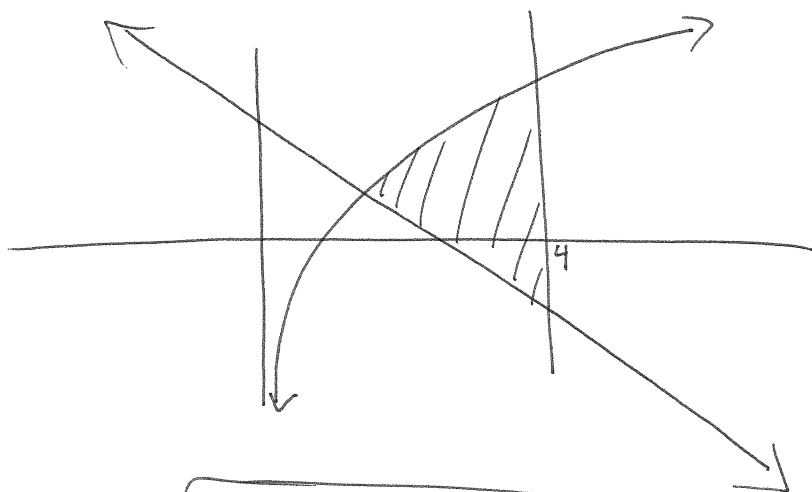
$$A = \int_{-4.8595}^{1.4337} |f(x) - g(x)| dx = 61.58 u^2$$

⑥ Bounds :

$$f(x) = h(x)$$

$$x = .6272$$

$$x = 4 \text{ (given)}$$



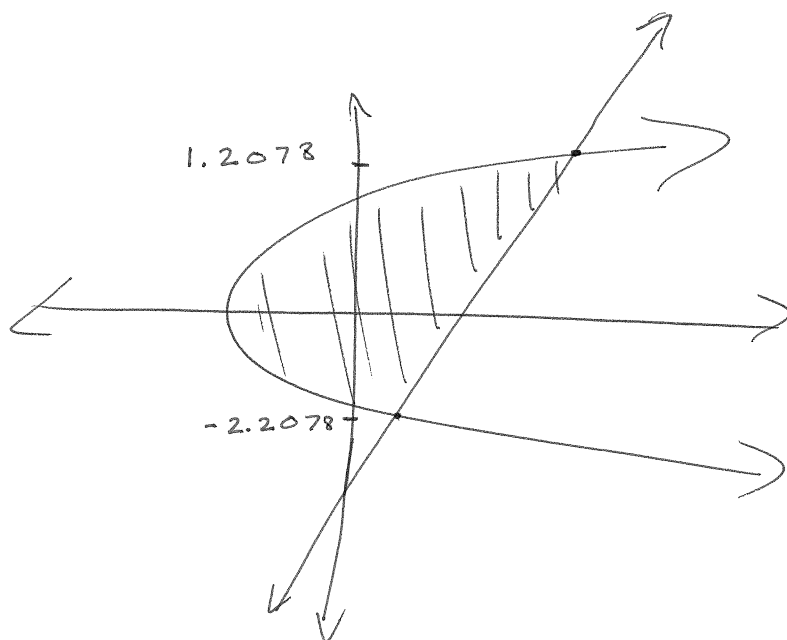
$$A = \int_{.6272}^4 (f(x) - h(x)) dx = \boxed{14.4565 \text{ u}^2}$$

⑦ Bounds :

$$3y^2 + 2y - 5 = -y + 3$$

$$y = -2.2078$$

$$y = 1.2078$$



$$1.2078$$

$$A = \int_{-2.2078}^{1.2078} ((-y + 3) - (3y^2 + 2y - 5)) dy = \boxed{19.9246 \text{ u}^2}$$