19 - 20h - 26 g)

19. $f(x) = x^{2/3} + x$, $F(1) = 1$

$$\int x^{2/3} + x\,dx = \frac{x^{2/3+1}}{\frac{2}{3}+1} + \frac{x^{1+1}}{1+1} = \frac{x^{5/3}}{5/3} + \frac{x^2}{2} \Rightarrow$$

$$F = \frac{3x^{5/3}}{5} + \frac{x^2}{2} \quad \frac{3x^{5/3}}{5} + \frac{x^2}{2} + C \Rightarrow \frac{3(1)^{5/3}}{5} + \frac{1^2}{2} + C = 1$$

$$\frac{3}{5} + \frac{1}{2} + C = 1 \Rightarrow C = 1 - \frac{3}{5} - \frac{1}{2} \Rightarrow \frac{10 - 6 - 5}{10} = \frac{-1}{10}$$

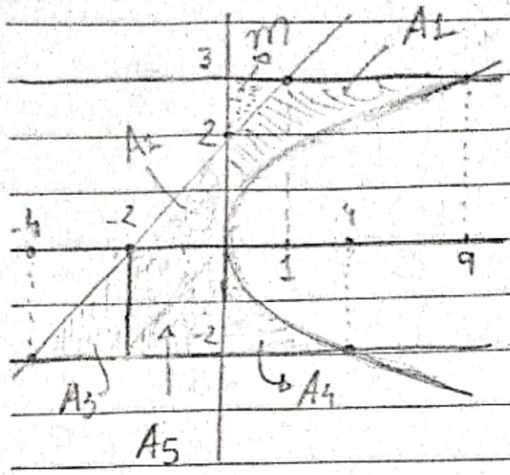
$C = -\frac{1}{10}$ assim ficamos com $F(x) = \frac{3x^{5/3}}{5} + \frac{x^2}{2} - \frac{1}{10}$

20h $$\int \frac{dy}{y^2 - 4y + 4} \Rightarrow \frac{1}{y^2 - 4y + 4} \Rightarrow \frac{1}{(y-2)^2} \Rightarrow$$ * $y - 2 = t$

$$\frac{1}{t^2}\,dt \Rightarrow \int 1 \cdot t^{-2} = \int t^{-2} \Rightarrow \frac{t^{-2+1}}{-2+1} \Rightarrow \frac{t^{-1}}{-1} \Rightarrow -\frac{1}{t}$$

$$= -\frac{1}{y-2} + C$$

26.g, $x = y^2$, $y - x = 2$, $y = -2$ e $y = 3$



$x = y^2 \Rightarrow$ Parábola >0 em y

$y - x = 2 \Rightarrow y = 2 + x \Rightarrow y = x + 2$

* $2 + x = 0 \Rightarrow x = -2$

$f(0) = 0 + 2 = 2$

$m = \frac{1}{2}$; $A_1 = 9$; $A_2 = 2$

$A_3 = 2$; $A_4 = \frac{8}{3}$; $A_5 = 4$

$x + 2 = 3 \Rightarrow x + 2 - 3 = 0 \Rightarrow x = 1$

$\sqrt{x} = 3 \Rightarrow \sqrt{x} - 3 = 0 \Rightarrow \sqrt{x} = 3 \Rightarrow x = 9$

$-\sqrt{x} = -2 \Rightarrow -\sqrt{x} = -2 \cdot (-1) \Rightarrow \sqrt{x} - 2 = 0 \Rightarrow x = 4$

$x + 2 = -2 \Rightarrow x + 4 = 0 \Rightarrow x = -4$

*m: $\int_0^1 (3-(x+2))\,dx = \int_0^1 (3 - x - 2)\,dx \Rightarrow \int_0^1 (-x+1)\,dx = -\frac{x^2}{2} + x$

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

A1: $\int_0^9 (3 - \sqrt{x})\,dx \Rightarrow 3x - \frac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1} \Rightarrow 3x - \frac{x^{3/2}}{3/2} \Rightarrow 3x - \frac{\sqrt{x^3}}{3/2} \Rightarrow$

$3x - \sqrt{x^3} \cdot \frac{2}{3} \Rightarrow 3x - \frac{2\sqrt{x^3}}{3} \Rightarrow \left(3 \cdot 9 - \frac{2\sqrt{9^3}}{3}\right) - \left(3 \cdot 0 - \frac{2\sqrt{0}}{3}\right) \Rightarrow$

$27 - \frac{2\sqrt{9}^3}{3} \Rightarrow 27 - \frac{2 \cdot 3^3}{3} \Rightarrow 27 - \frac{54}{3} = 27 - 18 = 9$

$A_2: \int_{-2}^{0} (0-(x+2))\,dx = -\int_{-2}^{0} (x+2)\,dx = \frac{x^2}{2} + 2x \Rightarrow$

$\left(\frac{0^2}{2} + 2\cdot 0\right) - \left(\frac{(-2)^2}{2} + 2\cdot(-2)\right) \Rightarrow (2-4) = 2$

$A_3: \int_{-4}^{-2} (x+2-(-2)) = \int_{-4}^{-2} (x+4) = \left(\frac{x^2}{2} + 4x\right) \Rightarrow$

$\left(\frac{(-2)^2}{2} + 4\cdot(-2)\right) - \left(\frac{(-4)^2}{2} + 4\cdot(-4)\right) = (2-8) - (8-16) = -6+8 = 2$

$A_4: \int_{0}^{4} (-\sqrt{x} - (-2))\,dx \Rightarrow \int_{0}^{4} (-x^{1/2} + 2) \Rightarrow -\frac{x^{1/2+1}}{1/2+1} + 2x \Rightarrow$

$-\frac{x^{3/2}}{3/2} + 2x \Rightarrow -\frac{\sqrt{x^3}}{3/2} + 2x \Rightarrow -\frac{2\sqrt{x^3}}{3} + 2x \Rightarrow$

$\left(\frac{-2\sqrt{4^3}}{3} + 2\cdot 4\right) - \left(\frac{-2\sqrt{0^3}}{3} + 2\cdot 0\right) \Rightarrow \left(\frac{-2\cdot 8}{3} + 8\right) = \frac{8}{3}$

$A_5: \int_{-2}^{0} (0-(-2)) = \int_{-2}^{0} (2)\,dx \Rightarrow 2x \Rightarrow (2\cdot 0) - (2\cdot(-2)) = 4$

$A_1 + A_2 + A_3 + A_4 + A_5 \Rightarrow 9 + 2 + 2 + \frac{8}{3} + 4 = \frac{27+6+6+8+12}{3}$

$\frac{59}{3} \Rightarrow \frac{59}{3} - \frac{1}{2} = \frac{118-3}{6} = \frac{115}{6}$