a) $f(x) = \frac{1}{2}x^2 - 3x$

$0 = x^2 - 6x$

$= x(x-6)$

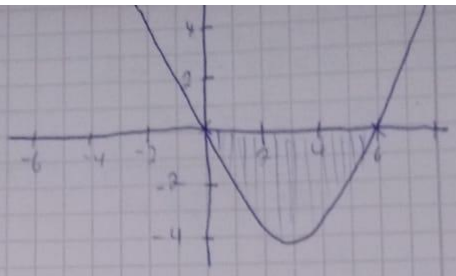
$\hookrightarrow x_1 = 0 \quad \hookrightarrow x_2 = 6$

$F(x) = \frac{1}{6}x^3 - \frac{3}{2}x^2$

$\int_0^6 f(x)\,dx = [F(x)]_0^6 \Rightarrow F(6)$

$F(6) = \frac{1}{6}\cdot 6^3 - \frac{3}{2}\cdot 6^2$

$= 36 - 54 = -18\ FE$



b) $f(x) = \frac{1}{2}x^4 + x^3$

$0 = x^3(x+2) \Rightarrow x_{1,2,3} = 0 \quad x_4 = -2$

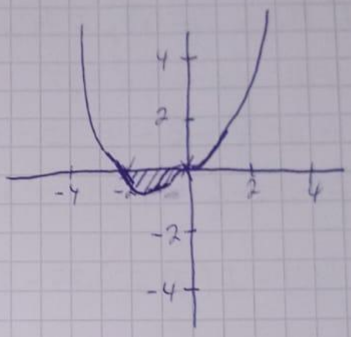
$\int_{-2}^{0} f(x)\,dx = [F(x)]_{-2}^{0} \Rightarrow -F(-2)$

$F(x) = \frac{1}{10}x^5 + \frac{1}{4}x^4$

$F(-2) = \frac{1}{10}\cdot(-2)^5 + \frac{1}{4}\cdot(-2)^4$

$F(-2) = -3{,}2 + 4 = 0{,}8$

$-F(-2) = -0{,}8\ FE$



c) $f(x) = -x^4 + 6x^3 - 9x^2$

$0 = x^2(x^2 - 6x + 9)$

$\hookrightarrow x_{1,2} = 0$

$\frac{6}{2} \pm \sqrt{\left(\frac{6}{2}\right)^2 - 9} \quad x_{3,4} = 3$

$3 \pm \sqrt{9-9}$

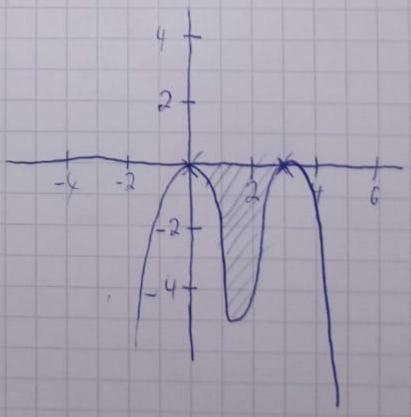
$x_{3,4} = 3$

$\int_0^2 f(x)\,dx = [F(x)]_0^2 = F(2)$

$F(x) = -\frac{1}{5}x^5 + \frac{3}{2}x^4 - 3x^3$

$F(3) = -\frac{1}{5}\cdot 3^5 + \frac{3}{2}\cdot 3^4 - 3\cdot 3^3$

$-48\frac{3}{5} + 72\frac{1}{2} - 81 = -8{,}7\ FE$



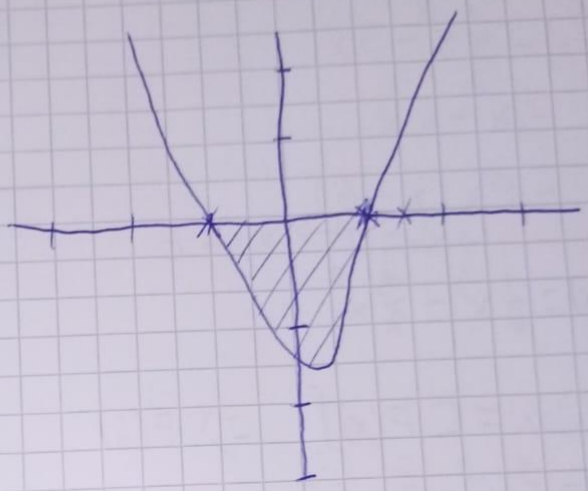
d) $l(x) = \frac{1}{2}x^2 - \frac{1}{2}x - 3$

$0 = x^2 - x - 6$

$\frac{1}{2} \pm \sqrt{(\frac{-1}{2})^2 + 6}$

$x_1 = 3$

$x_2 = -2$



$\int_{-2}^{3} l(x)\,dx = [F(x)]_{-2}^{3} = F(3) - F(-2)$

$F(x) = \frac{1}{6}x^3 - \frac{1}{4}x^2 - 3x$

$F(3) = \frac{27}{6} - \frac{9}{4} - 9 = -6,75$ FF

$F(-2) = -\frac{8}{6} - 1 + 6 = 3\frac{2}{3}$ FE

$F(3) - F(-2) = -6,75 - 3,\overline{66} = -9\frac{17}{12} = -10\frac{5}{12}$ FE