

17 ~~Find the derivative of~~ $y = \frac{x^3}{3} + \frac{x^2}{2} - 2x + 1$

a) Find y' .

$$\rightarrow y' = \frac{3x^2}{3} + \frac{2x}{2} - 2$$

$$y' = x^2 + x - 2$$

b) Find the critical values.

$$y' = 0$$

$$x^2 + x - 2 = 0$$

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

$$\therefore x = -2, 1$$

y' is undefined: No values.

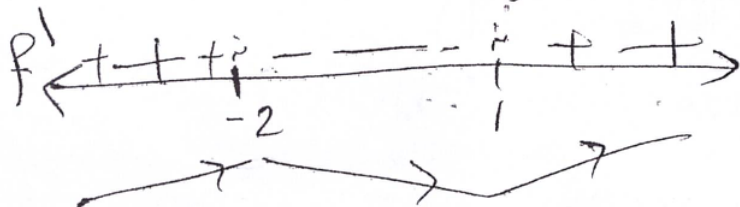
so the critical values: $x = -2, 1$.

c) Find the critical points.

$$(-2, f(-2)) = (-2, \frac{13}{3})$$

$$(1, f(1)) = (1, -\frac{1}{6})$$

d) Find the intervals where the function is increasing and where it is decreasing.



$\therefore f(x)$ is increasing in $(-\infty, -2) \cup (1, \infty)$

$\therefore f(x)$ is decreasing in $(-2, 1)$.