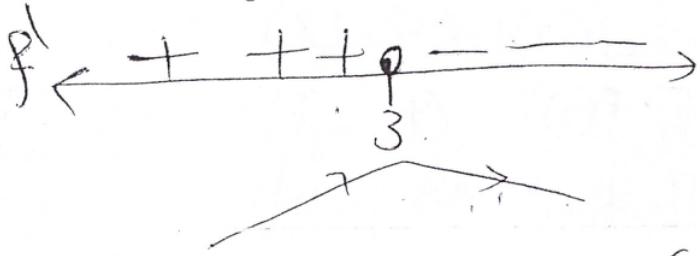


d) Find intervals where $f(x)$ is increasing and decreasing.



$f(x)$ is increasing on $(-\infty, 3)$.

$f(x)$ is decreasing on $(3, \infty)$.

e) classify the critical values as relative max, min or horizontal point of inflection.

relative max: $(3, f(3)) = (3, 0)$.

min: No points.

horizontal points of inflection = No points.

30) find the relative max, min, horizontal points of inflection

$$y = \frac{1}{6}x^6 - x^4 + 7$$

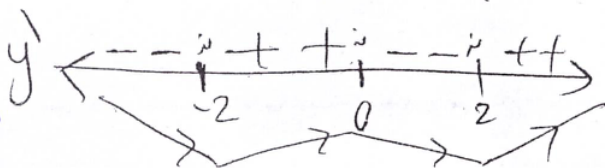
$$\begin{aligned} \rightarrow y' &= \frac{6x^5}{6} - 4x^3 \\ &= x^5 - 4x^3 \end{aligned}$$

$$y' = 0$$

$$x^5 - 4x^3 = 0 \rightarrow x^3(x^2 - 4) = 0$$

$$x^3 = 0 \rightarrow \boxed{x = 0}$$

$$x^2 - 4 = 0 \rightarrow x^2 = 4 \rightarrow \boxed{x = 2, -2}$$



max: $(0, f(0)) = (0, 7)$
 min: $(-2, f(-2)) = (-2, \frac{5}{3})$
 $(2, f(2)) = (2, \frac{5}{3})$