

10.  $f(x) = ?$ ,  $f'(x) = x^2 + 2x - 8$

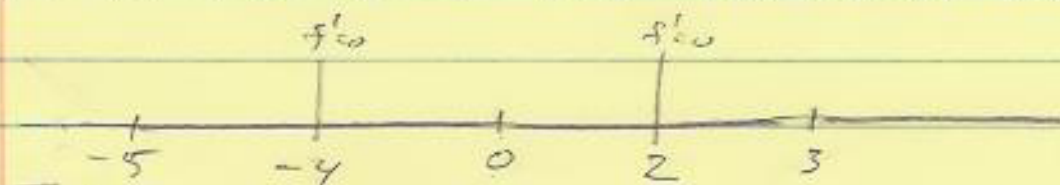
$f' \Rightarrow$  Inc / dec

$f'' \Rightarrow$  Concave up / down.

Part I Inc / Dec

$$f'(x) = x^2 + 2x - 8 = (x+4)(x-2) = 0$$

$\Rightarrow x = -4$  or  $x = 2$  are boundaries  $\uparrow$  and  $\downarrow$



$f'(-5) = (-5+4)(-5-2) = (-)(-) = + \Rightarrow$  increasing at  $x = -5$   
 $\Rightarrow$  increasing for  $(-\infty < x < -4)$

$f'(0) = (0+4)(0-2) = (+)(-) = (-) \Rightarrow$  decreasing at  $x = 0$   
 $\Rightarrow$  decreasing for  $(-4 < x < 2)$

$f'(3) = (3+4)(3-2) = (+)(+) = (+) \Rightarrow$  inc at  $x = 3$   
 $\Rightarrow$  increasing for  $(2 < x < +\infty)$