Math 1121

Homework #22

#6, #9

#6 $f(x) = x^3 - 6x^2 + 12x - 11$

$f'(x) = 3x^2 - 12x + 12$

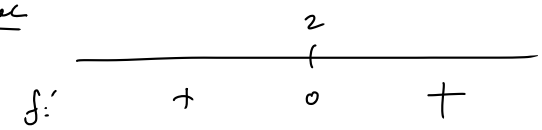
$= 3(x^2 - 4x + 4)$

$= 3(x-2)^2$

crit #s: $3(x-2)^2 = 0$

$x = 2$

inc/dec

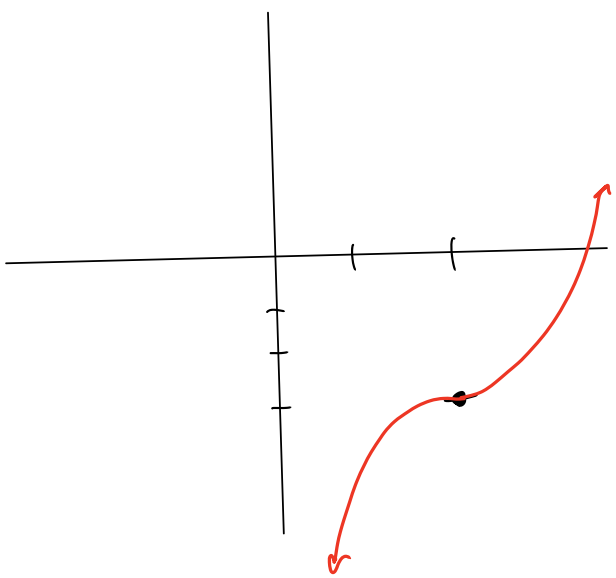


$f'(0) = 3(0-2)^2 = +$

$f'(3) = 3(3-2)^2 = +$

y-vals: $f(2) = 2^3 - 6 \cdot 2^2 + 12 \cdot 2 - 11$

$= -3$



#9 $f(x) = x^4 - 4x^3$

$f'(x) = 4x^3 - 12x^2$

$= 4x^2(x-3)$

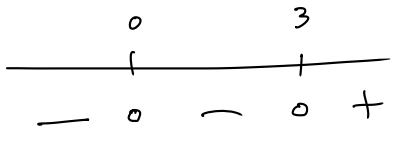
crit #: $4x^2 = 0$ $\quad x = 0$; $\quad x - 3 = 0$ $\quad x = 3$

y-vals

$f(0) = 0^4 - 4 \cdot 0^3 = 0$

$f(3) = 3^4 - 4 \cdot 3^3 = -27$

inc/dec



$f'(-1) = 4(-1)^2(-1-3) = + \cdot + \cdot -$

$f'(1) = 4 \cdot 1^2 \cdot (1-3) = + \cdot + \cdot -$

$f'(4) = 4 \cdot 4^2 (4-3) = + \cdot + \cdot +$