$y = 2x^3 + 3x^2 - 6$

$y' = 6x^2 + 6x$

$0 = 6x^2 + 6x$

$6x(x+1)$

$x = 0, -1$

$y'' = 12x + 6$

$x = -1/2$

Inc: $(-\infty, -1)$ "$x < -1$" $(0, \infty)$ "$x > 0$"

dec: $(-1, 0)$

$-1 < x < 0$

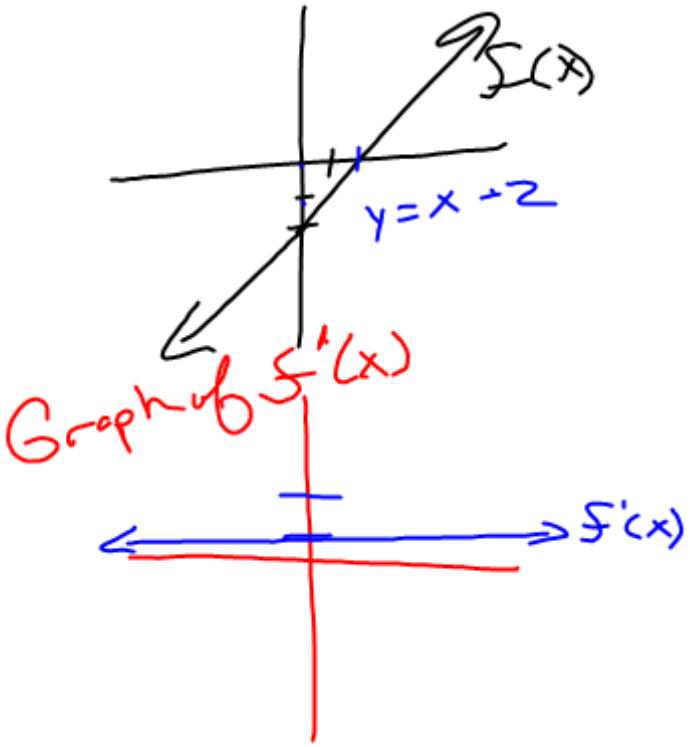
Rel max @ $x = -1$ $(-1, -5)$

Rel min @ $x = 0$ $(0, -6)$

Concave ↑: $(-1/2, \infty)$

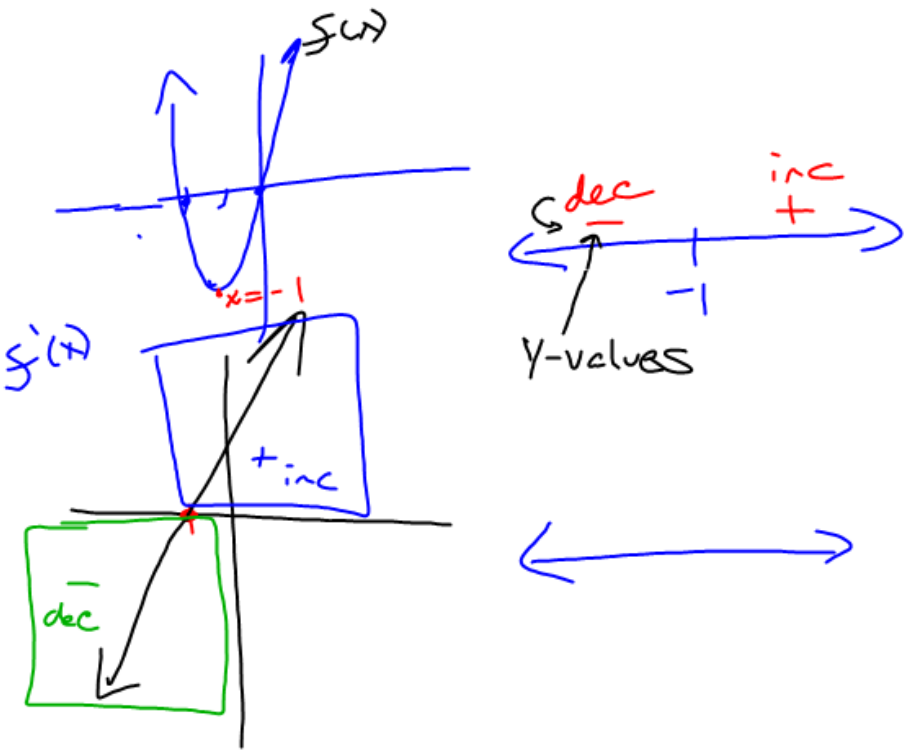
Concave ↓: $(-\infty, -1/2)$

P.O.I: $(-1/2, \quad)$

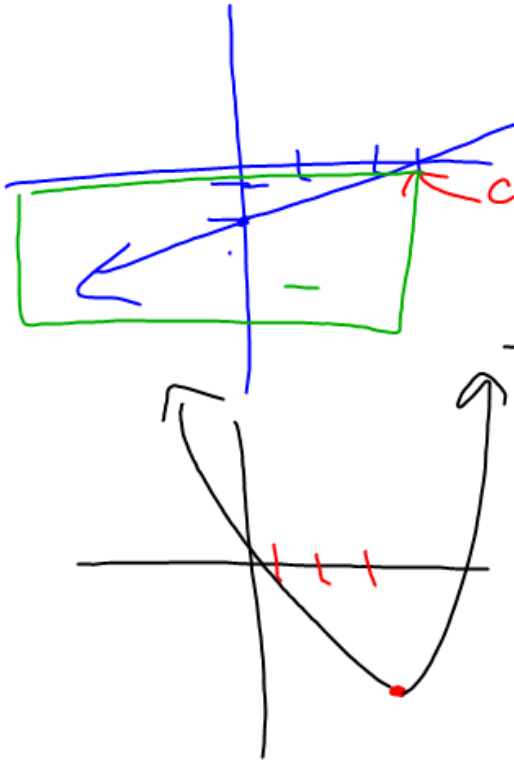


Graph of $f'(x)$

$f'(x)$


f(x)
x=-1
f'(x)
+ inc
− dec

dec
−
inc
+
-1
y-values



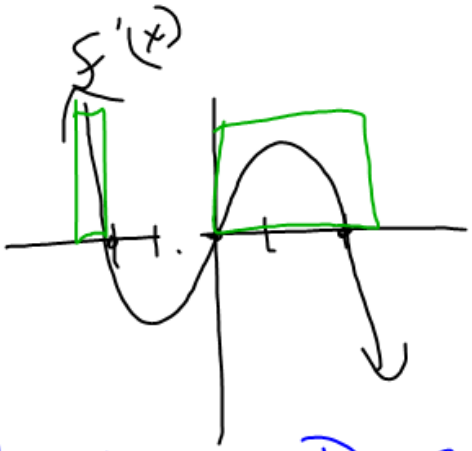
f(x)

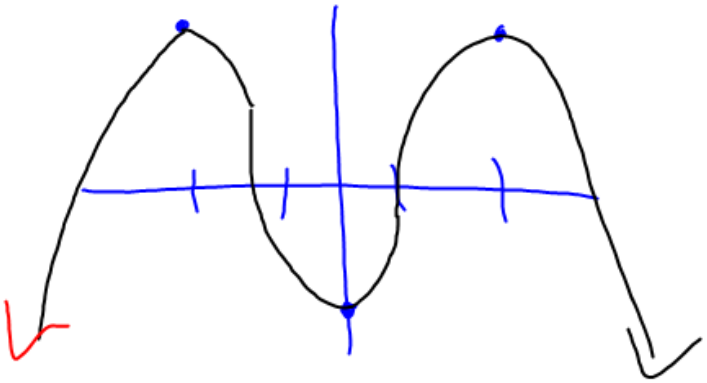
dec: $x < 3$

inc: $x > 3$

Rel min @ $x = 3$ $(3, ?)$

$f''(x) > 0$ (concave ↑)





Inc

+ y-values

$(-\infty, -2)$

$(0, 2)$

Dec

- y-values

$(-2, 0)$

$(2, \infty)$

C.P

Rel max @ $x = -2$ $x = 2$

Rel min @ $x = 0$

Concave ↑

inc

$(-1, 1)$

Concave ↓

dec

$(-\infty, -1)$

$(1, \infty)$

P.O.I

$x = -1, 1$

Pg 215

1-5

47, 49