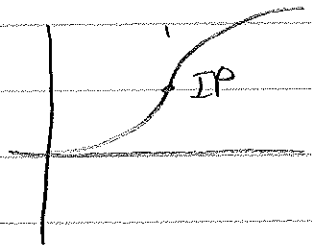
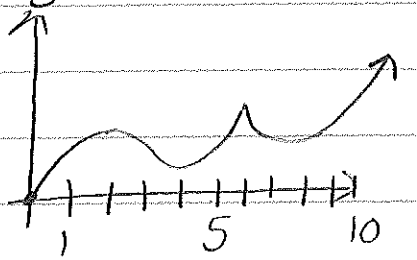
Sec 2.8 day 2 page 162 (12, 14-23, 28-31)

(12) a) moving right when ↑ and moving left when ↓
so moving right on (0,2) and (4,6)
and moving left on (2,4)
b) positive acceleration when concave up so on (3,6)
negative acceleration when concave down so on (0,3)

(14)



(15) a) f ↑ when $f' +$ so on (0,2) (4,6) and (8,∞)
f ↓ when $f' -$ so on (2,4) and (6,8)
b) local max $x=2$
local min $x=4$ and $x=8$
c) CU on (3,∞)
CD on (0,3)
d) $x=3$
e)



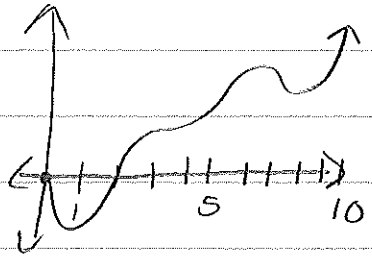
(16) a) $f\uparrow$ on $(1,6)$ and $(8,\infty)$
$f\downarrow$ on $(0,1)$ and $(6,8)$

b) local max $x=6$
local min $x=1$ and $x=8$

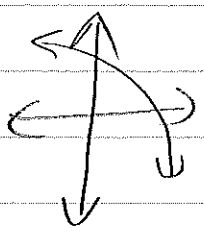
c) f CU on $(0,2)$, $(3,5)$, and $(7,\infty)$
f CD on $(2,3)$ and $(5,7)$

d) IP on $x=2, 3, 5,$ and 7

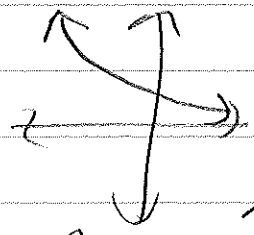
e)



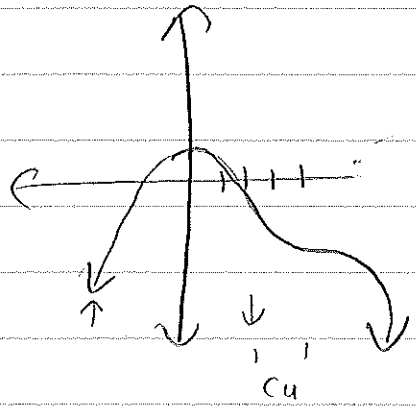
(17) $\downarrow$ CD



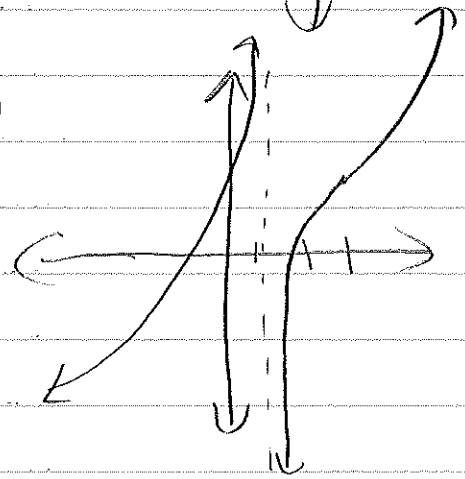
(18) $\downarrow$ CU



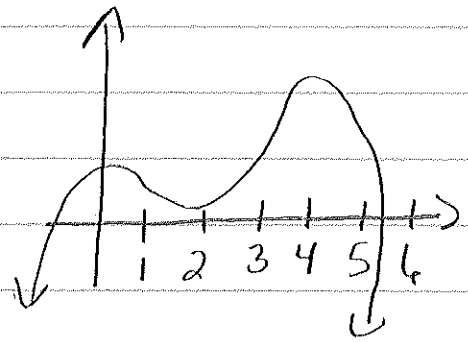
(19)



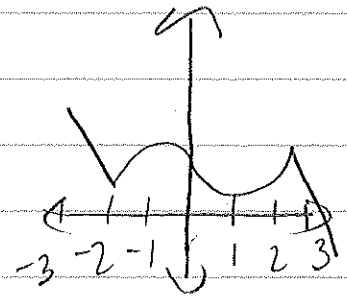
(20)



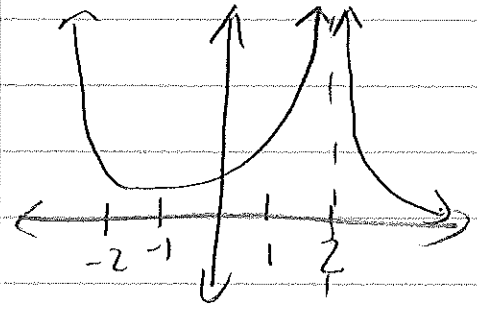
(21)



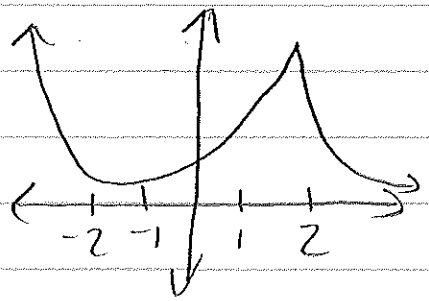
(22)



(23)



or



(28) $f(x) = x^4 - 2x^2$

a) $f'(x) = 4x^3 - 4x$

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

b) $4x^3 - 4x > 0$

$4x(x^2 - 1) > 0$

$4x(x+1)(x-1) > 0$

	$4x$	$x+1$	$x-1$			
$(-\infty, -1)$	−	−	−	−	↓	$f(x)$ inc on
$(-1, 0)$	−	+	−	+	↑	$(-1,0)$ and $(1,\infty)$
$(0, 1)$	+	+	−	−	↓	$f(x)$ dec on
$(1, \infty)$	+	+	+	+	↑	$(-\infty,-1)$ and $(0,1)$

(28) c) $12x^2 - 4 > 0$

$4(3x^2 - 1) > 0$

$4(\sqrt{3}x - 1)(\sqrt{3}x + 1) > 0$

$\sqrt{3}x - 1 > 0$ and $\sqrt{3}x + 1 > 0$

$x > 1/\sqrt{3}$ $\quad$ $x > -1/\sqrt{3}$

$f(x)$ is CU on $(-\infty, -1/\sqrt{3})$ and $(1/\sqrt{3}, \infty)$

$f(x)$ is CD on $(-1/\sqrt{3}, 1/\sqrt{3})$

(29) b $\quad$ (30) a

(3)