

Wed 12-14-05 → AP PINK (28) E

P.193 (44)

$$a) v(t = \frac{10}{7}) = 14 \frac{m}{s}$$

$$b) v(t) = 9.8t - 2 \quad (c = -2)$$

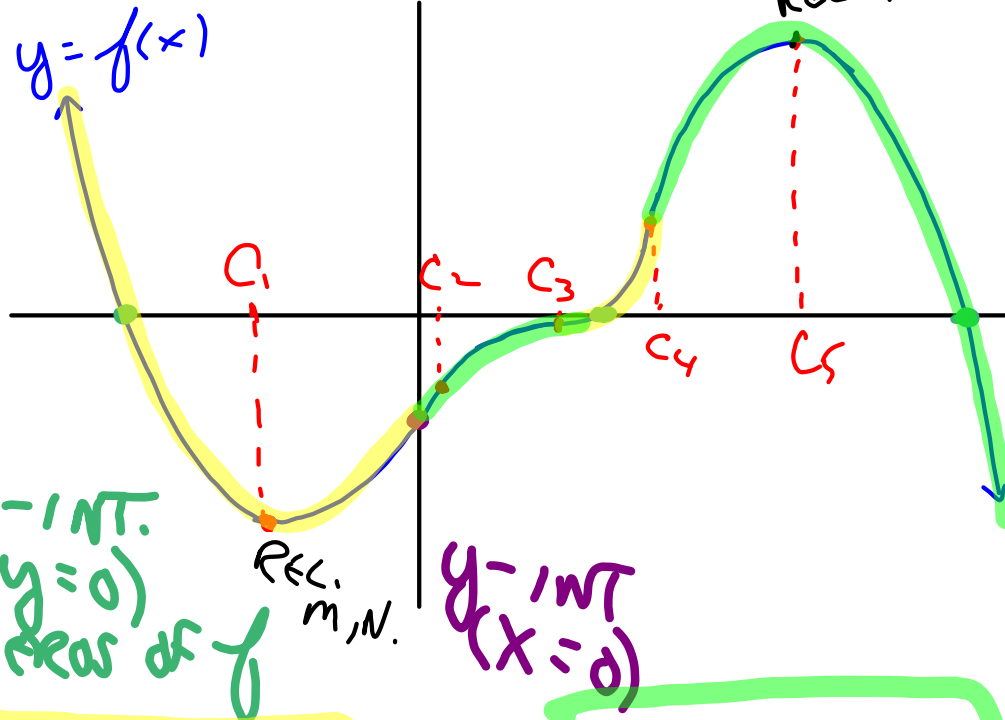
$$d(t) = 4.9t^2 - 2t = 10$$

$$\vdots$$
$$t \doteq 1.647 \text{ sec}$$

$$v(t \doteq 1.647) \doteq 14.142 \frac{m}{sec}$$

$$\text{OR } 10\sqrt{2} \frac{m}{sec} \quad (\text{EXACT ANSWER})$$

4.3 "THEORY" FIRST



X-INT.
($y=0$)
Zeros of f

Y-INT
($x=0$)

$f''(x) > 0$
→ f IS
CONCAVE UP.

$f''(x) < 0$
→ f IS
CONCAVE DOWN

$f''(x) = 0$
→ P.O.I. c_2, c_3, c_4

Ex. 1) DIRECTIONS: SEE p. 204 7-12, 9-f

$$y = -2x^3 + 3x^2 + 36x - 1$$

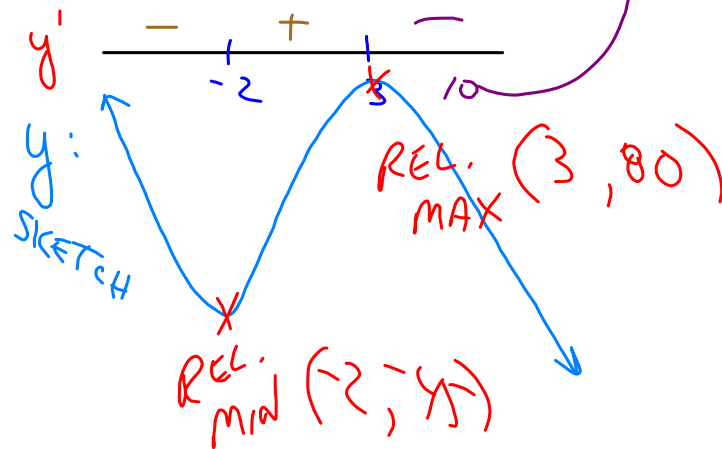
ANALYZE

$$y' = -6x^2 + 6x + 36 = 0$$

$$y' = -6(x^2 - x - 6) = 0$$

$$y' = -6(x-3)(x+2) = 0$$

$x=3; x=-2$ CRIT. #'S.



a) INC: $-2 < x < 3$

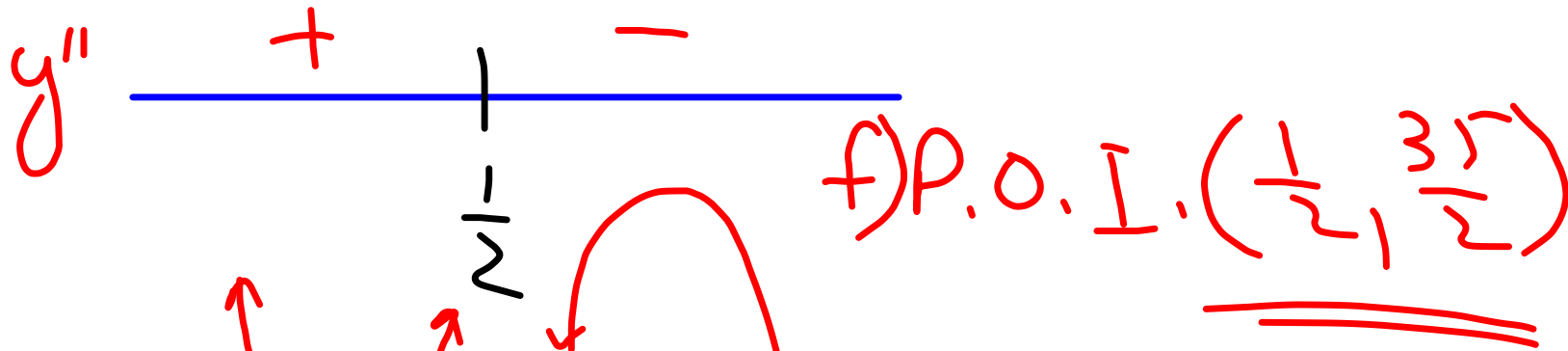
b) DEC: $x < -2; x > 3$

c) REL. MIN $(-2, -45)$
REL. MAX $(3, 80)$

$$y'' = -12x + 6 = 0$$

$$-12x = -6$$

$$\underline{\underline{x = \frac{1}{2}}}$$



c) conc. up $x < \frac{1}{2}$

d) conc. down $x > \frac{1}{2}$

F1→ Tools	F2→ Zoom	F3 Edit	F4 ✓	F5→ All	F6→ Style	F7 :rec.	
--------------	-------------	------------	---------	------------	--------------	-------------	--

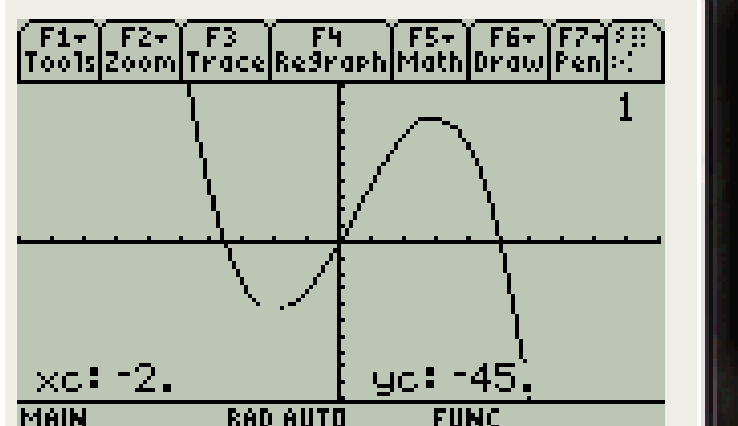
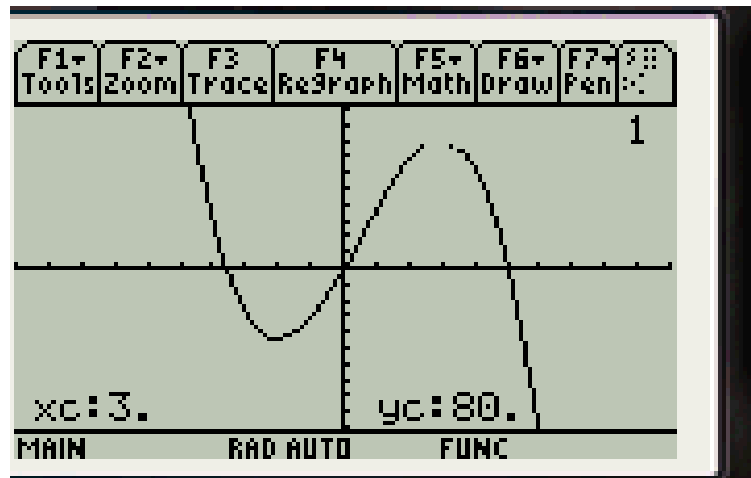
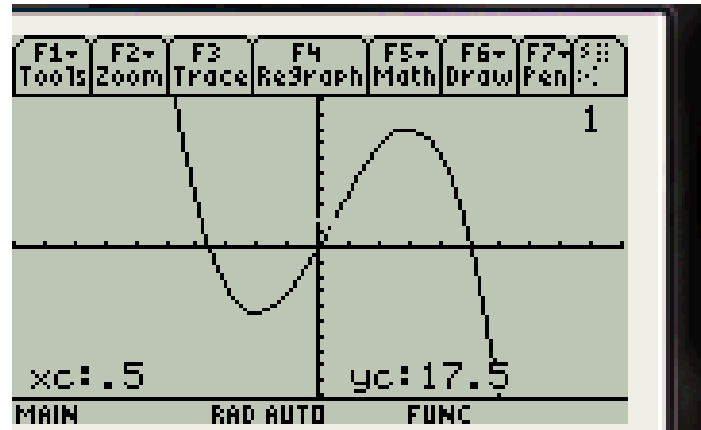
+PLOTS

✓y1=-2·x³+3·x²+36·x-1

F1→ Tools	F2→ Zoom	
--------------	-------------	--

xmin=-10.
xmax=10.
xscl=1.
ymin=-100.
ymax=100.
yscl=10.
xres=2.

H1 COURTNEY

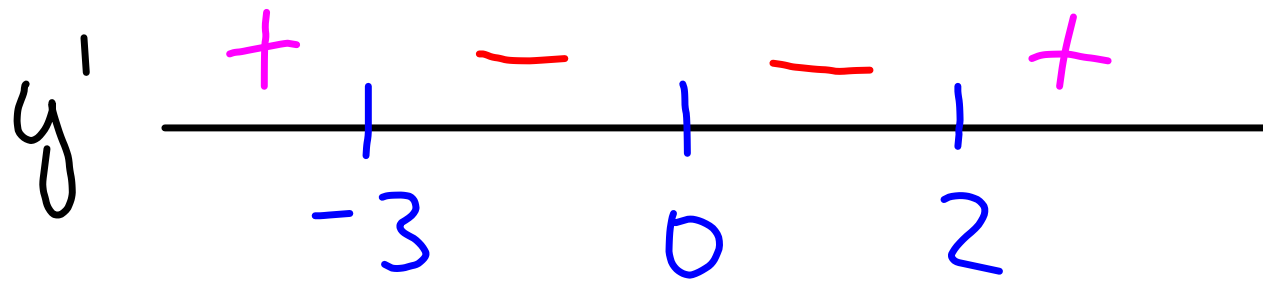


Ex 2) IN GROUPS; SAME DIRECTIONS

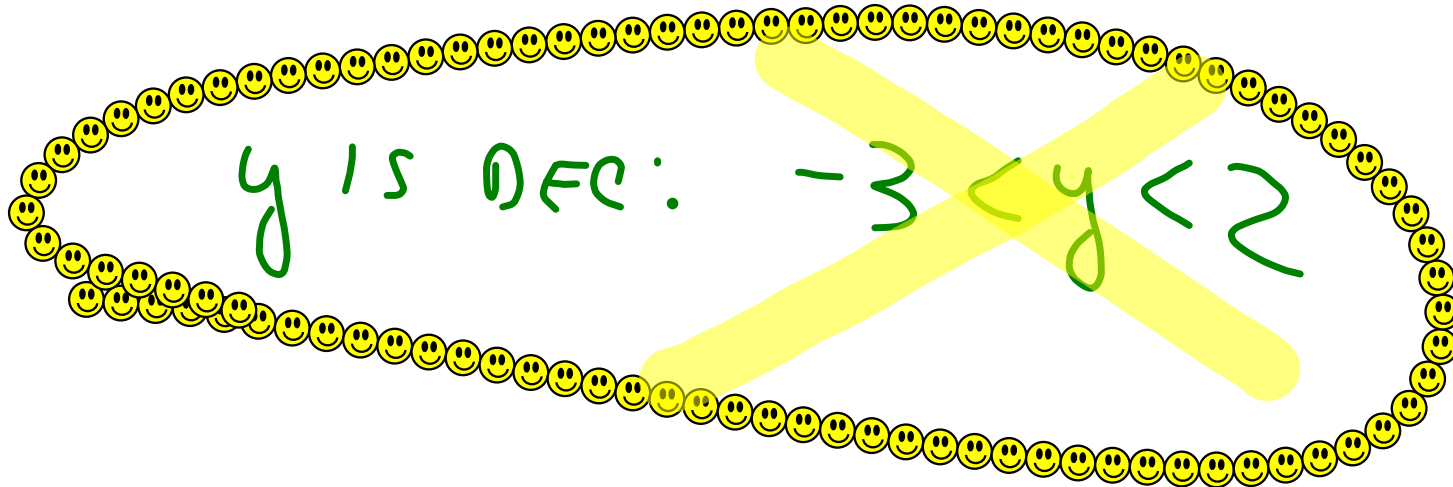
$$y = \frac{1}{5}x^5 + \frac{1}{4}x^4 - 2x^3$$

COURTNEY: TRY THIS ON YOUR OWN FIRST.

SOLUTIONS ON NEXT PAGE...



* HEY! SIGNS DON'T ALTERNATE!



Ex 2) SUMMARY OF ANSWERS:

a) y IS INC. WHEN $x < -3$ AND WHEN $x > 2$

b) y IS DEC. WHEN $-3 < x < 0$ AND WHEN
 $0 < x < 2$

c) y IS CONCAVE UP WHEN

$-2.147 < x < 0$ AND WHEN $x > 1.397$
(APPROX) (APPROX)

d) y IS CONCAVE DOWN WHEN $x < -2.147$
AND WHEN $0 < x < 1.397$

e) REL. MAX: $(-3, \frac{513}{20})$

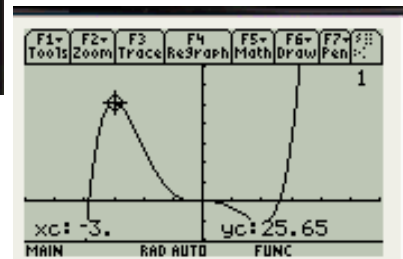
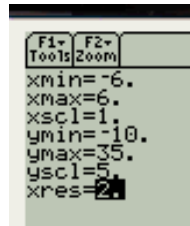
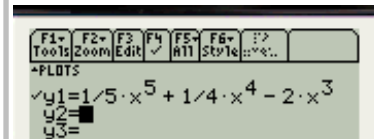
REL. MIN: $(2, -\frac{28}{5})$

f) P.O.I. $(0, 0)$ $(-2.147, 15.982)$
 $(1.397, -3.436)$

*CHECK GRAPHICALLY:

$x \in [-6, 6]$, $y \in [-10, 35]$

*TRACE TO CHECK
KEY POINTS



O.T.L.

- FINISH EXAMPLE 2
CHECK GRAPHICALLY

• P.203-4 1-9(000), 13

• AP P.19 (B^4) #76

G.C. OK BUT NO CAS