# Curve Sketching Review

2) Inc / Dec
   1) Find crit pts
   2) Test pts.

Look out for points of differentiability
- Original – no fraction
- f' = has a fraction

2(b)


$f(x) = \frac{\ln x}{x^2}$

3) Concave Up / Down – Don't find crit pts.
   Use only f''.

4) From #3


Infl. pts. $(-3, \_\_)$ $(6, \_\_)$

# Extrema

5) Relative Extrema

**First Derv**

1) Find crit.
2) Mountain Test

− + + −

**2nd Derv**

1) Find crit pts
2) Sub crit pts. in f''

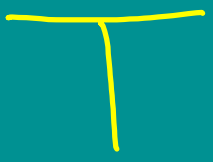
$f''(-1) = +$ ∪

-1 is rel min

6) Absolute Extrema — Find crit pts.

( , ) ← Do limits

[ , ] ← Test endpoints in f.



7) Asymptotes

**Vertical**

where denom = 0

$\lim_{x \to \#} f(x) = \pm\infty$

$x = \#$

**Horiz**

$\lim_{x \to \infty} f(x) = \#$

$y = \#$

**Slant**

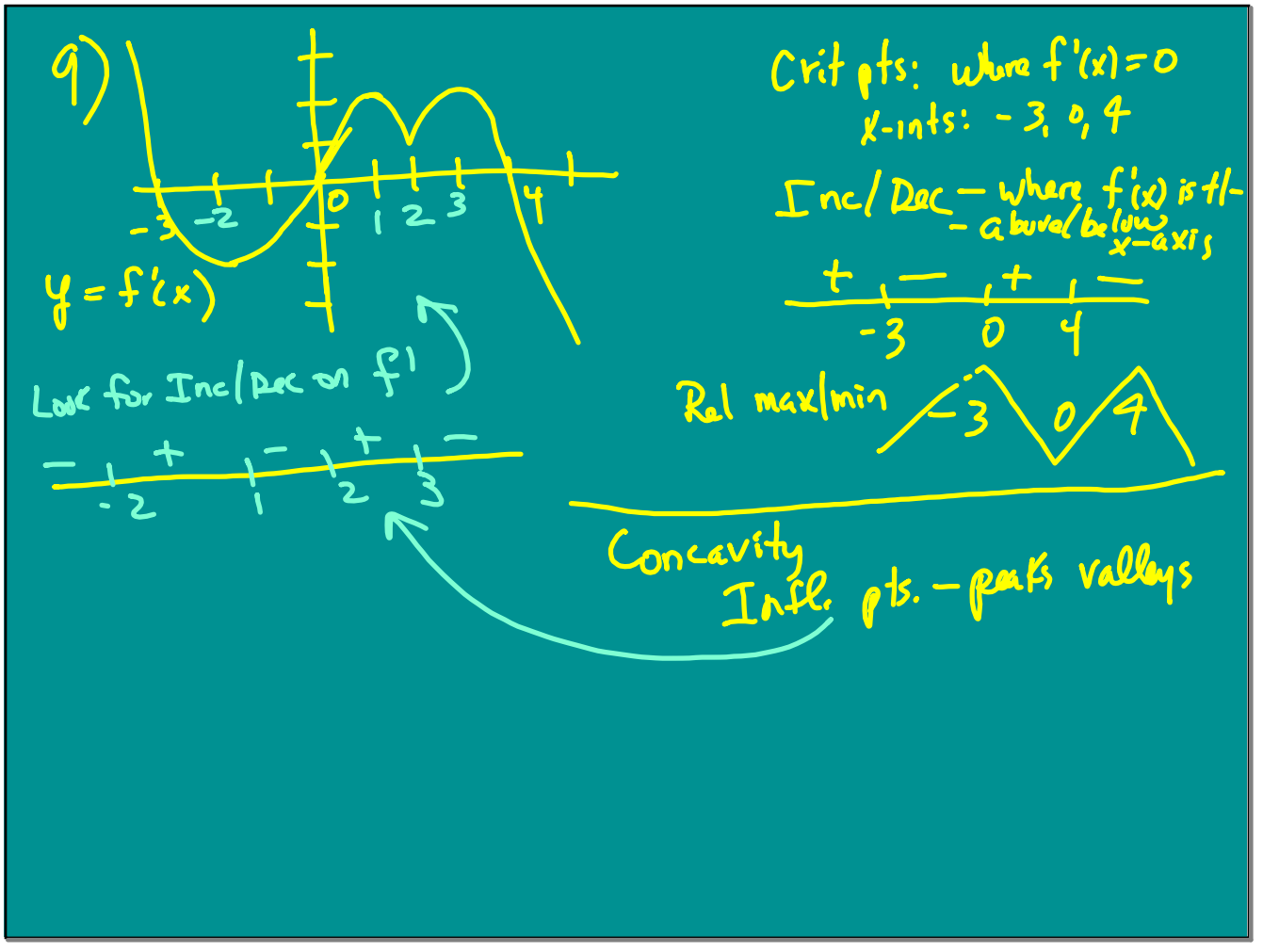
num. is one power higher

**Curvilinear**

numerator is 2 or more powers higher

long division

8) Graphing


9)
-3 -2 0 1 2 3 4
y = f'(x)
Look for Inc/Dec on f'
- + - + -
-2 1 2 3
Crit pts: where f'(x) = 0
x-ints: -3, 0, 4
Inc/Dec - where f(x) is +/-
- a curve/below x-axis
+ - + -
-3 0 4
Rel max/min
-3 0 4
Concavity
Infl. pts. - peaks valleys

11 $f(x) = \frac{1}{3}x^3 + 2x \quad (0, 3)$

$f'(x) = x^2 + 2$

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

$$c^2 + 2 = \frac{f(3) - f(0)}{3 - 0}$$

$$c^2 + 2 = \frac{15 - 0}{3 - 0}$$

$$c^2 + 2 = 5$$

$$\sqrt{c^2} = \sqrt{3}$$

$$c = \pm\sqrt{3}$$

not in interval