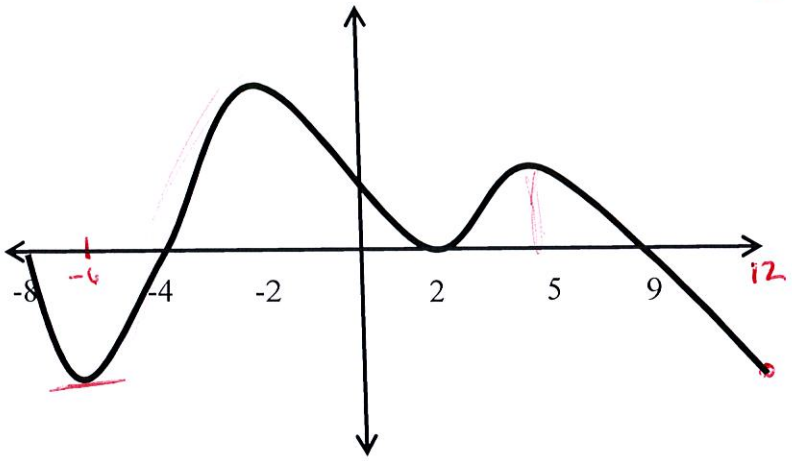
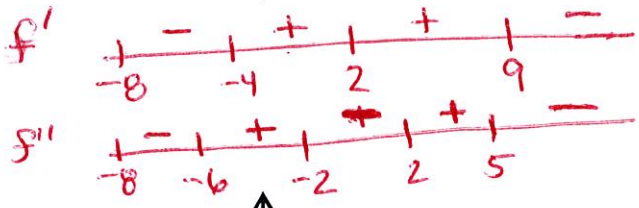
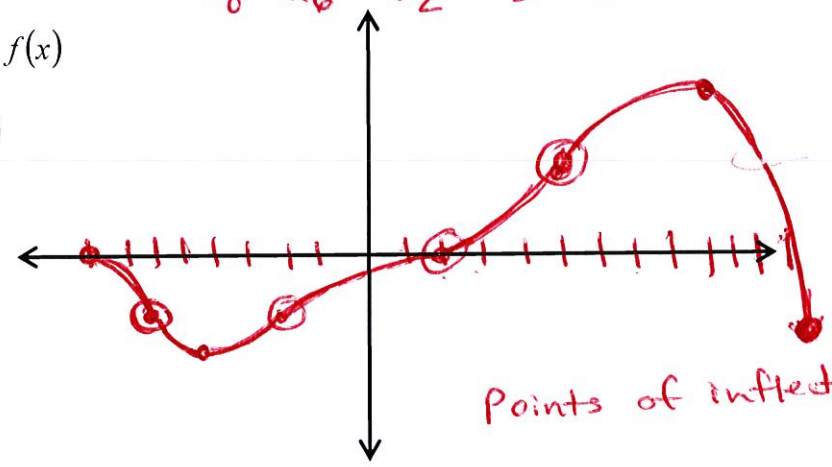
Let's sketch a possible graph for f given the following graph of $f'(x)$ $[-8, 12]$





$f(x)$

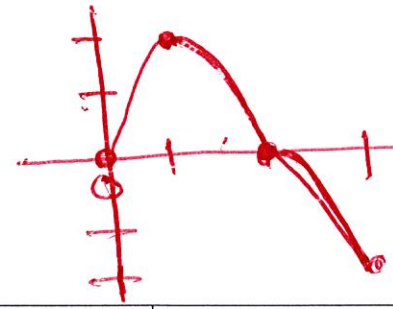
$f(-8) = 0$



Points of inflection $x = -6, x = -2$
$x = 2, x = 5$

Ex: f is continuous on $[0, 3]$

x	0	1	2	3
$f(x)$	0	2	0	-2
$f'(x)$	3	0	DNE	-3
$f''(x)$	0	-1	DNE	0



① Find the absolute extrema
② Find pts of inf.
③ sketch.

x	$0 < x < 1$	$1 < x < 2$	$2 < x < 3$
f	+	+	−
f'	+	−	−
f''	−	−	−

f'' concave down
no pts of inflection.

Find each of the following, then sketch the graph. Show work/logic used.

NO GRAPHING CALCULATORS

1. $f(x) = -\frac{1}{3}x^3 + x^2$

A: Intercepts:

x-intercept(s) $(0,0), (3,0)$

y-intercept(s) $(0,0)$

B: Symmetry:

y-axis: Y/(N)

origin: (Y)/N

C: Domain $(-\infty, \infty)$

Range $(-\infty, \infty)$

D: Vertical Asymptote(s): N/A

Horizontal Asymptote: N/A

End Behavior: $\lim_{x\to-\infty} f(x) = \infty$ $\lim_{x\to\infty} f(x) = -\infty$

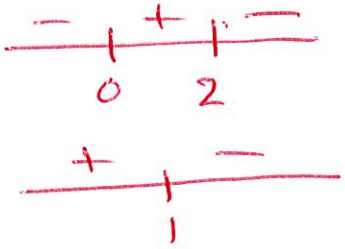
E: $f'(x) = -x^2 + 2x$

Critical Point(s): $x = 0$ $x = 2$

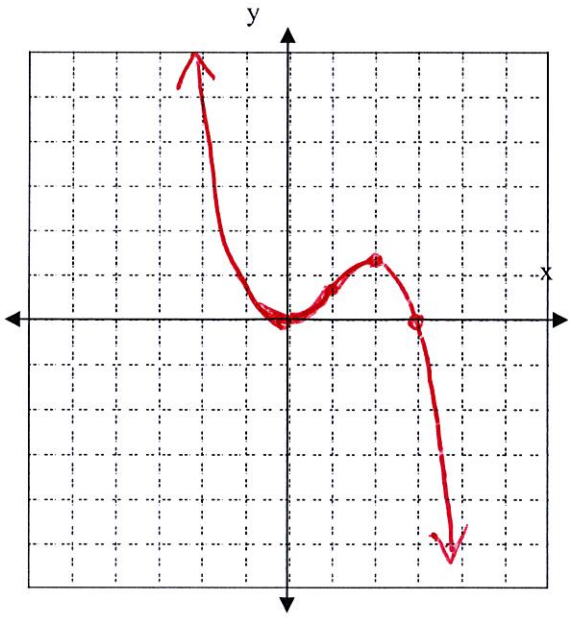
F: $f''(x) = -2x + 2$

Inflection Point(s): $(1, 2/3)$

rel min $(0,0)$ max $(2, 4/3)$



Label Axis



Find each of the following, then sketch the graph. Show work/logic used.

NO GRAPHING CALCULATORS

1. $f(x) = \dfrac{x^2 - 2x + 4}{x - 2}$

A: Intercepts:

x-intercept(s) NONE

y-intercept(s) $(0, -2)$

B: Symmetry:

y-axis: Y/(N)

origin: Y/(N)

C: Domain $(-\infty, 2) \cup (2, \infty)$

Range _____

D: Vertical Asymptote(s): $x = 2$

Horizontal Asymptote: N/A

SLANT $y = x$

End Behavior: $\lim_{x \to -\infty} f(x) = -\infty$ $\lim_{x \to \infty} f(x) = \infty$

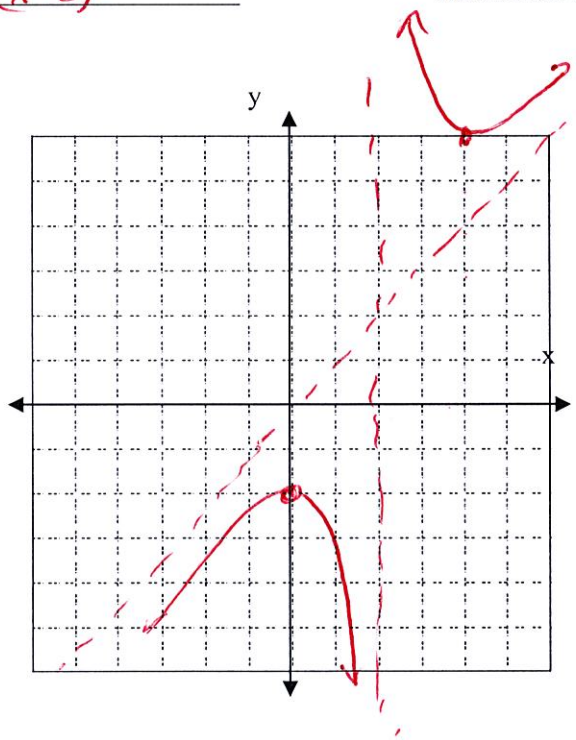
E: $f'(x) = \dfrac{x(x-4)}{(x-2)^2}$

Critical Point(s): $x = 0$ $x = 4$

F: $f''(x) = \dfrac{8}{(x-2)^3}$

Inflection Point(s): none

Label Axis



rel max $(0, -2)$ min $(4, 6)$

f'

$+ \;|\; + \;|\; - \;|\; +$

$0 \quad 2 \quad 4$

$- \;|\; +$

2