Chapter 4
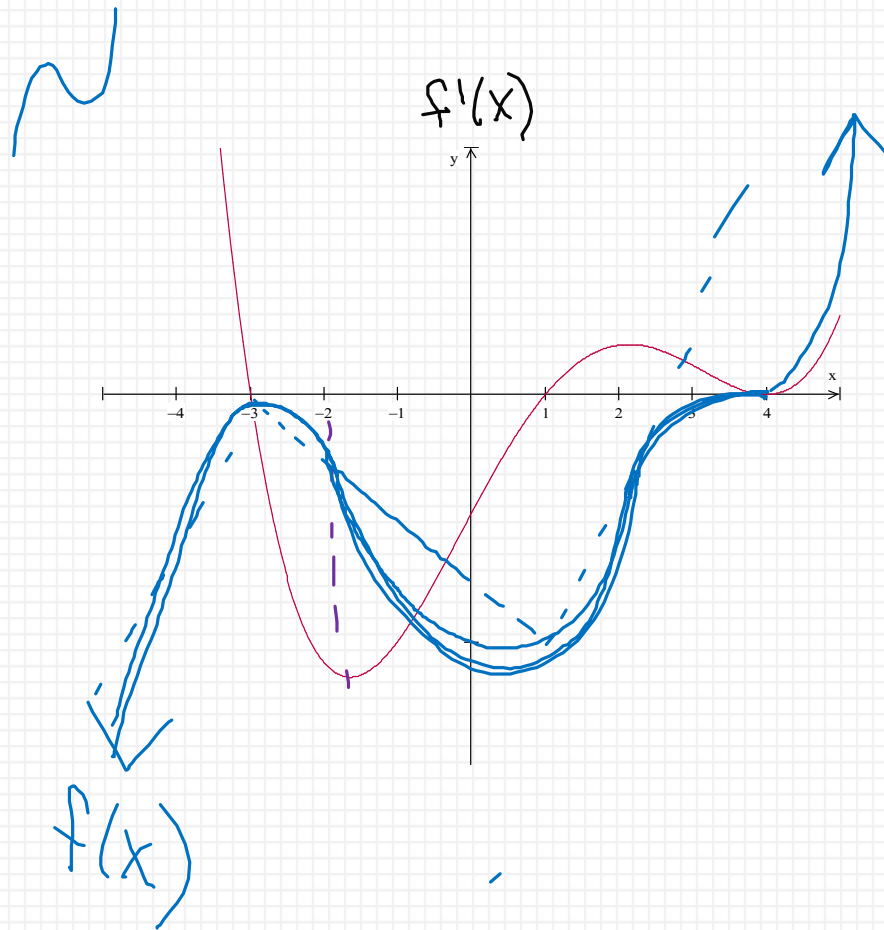
Section 4.3 – Curve Sketching

Given the graph of f′(x), what can you determine about f and f″?

$f' > 0 \quad (-\infty, -3) \cup (1, 4) \cup (4, \infty)$

$\Rightarrow f$ INCREASING on ↗

$f' < 0 \quad (-3, 1) \Rightarrow f$ DECREASING
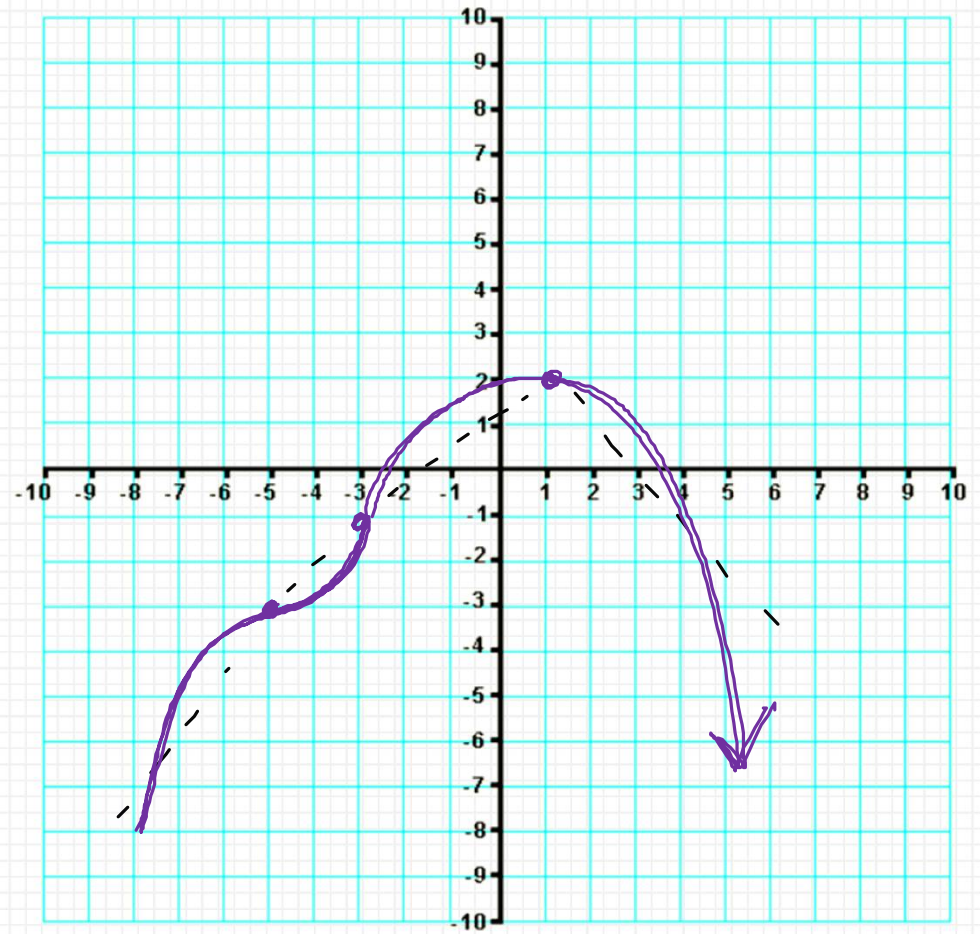
$f'' > 0$ on $(-2, 2) \cup (4, \infty)$ SINCE

f' INCREASING $\Rightarrow f$ CC↑ on ↰

$f'' < 0$ on $(-\infty, -2) \cup (2, 4)$ SINCE

f' DECREASING $\Rightarrow f$ CC↓ on ↰
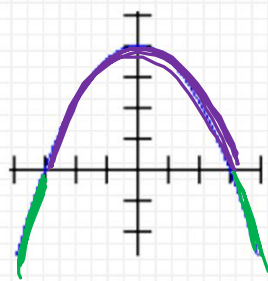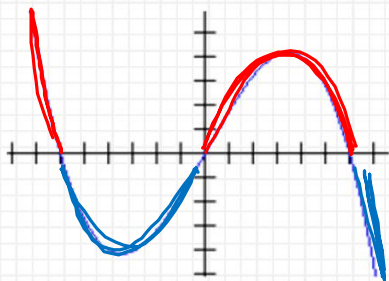
2. $f'(x) > 0$ when $x < 1$ f INCR

$f'(x) < 0$ when $x > 1$ f DECR

$f'(x) = 0$ when $x = 1$ CRIT PT (MAX)

$f(1) = 2, \; f(-3) = -1, \; f(-5) = -3$ POINTS

$f''(x) = 0$ when $x = -3, -5$ PDI

$f''(x) > 0$ when $-5 < x < -3$ f CC ↑

$f''(x) < 0$ when $x < -5, \; x > -3$ f CC ↓

5. $f(3) = -2$, $f(-3) = -2$, $f(-6) = 4$, $f(0) = -8$, $f(6) = 4$
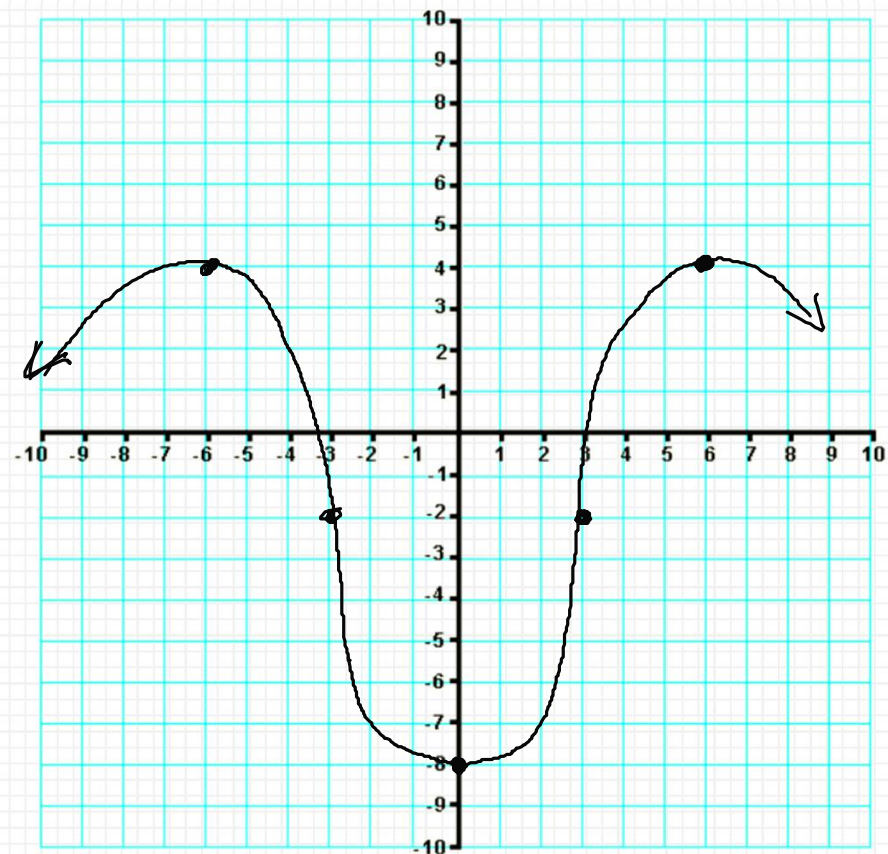
Graph of $f'(x)$ Graph of $f''(x)$

$f' > 0$ $f' < 0$ $f'' > 0$ $f'' < 0$

f INCR   f DECR   f CC↑   f CC↓

Homework/Classwork:

AP Packet #30 – 36, 41 – 45