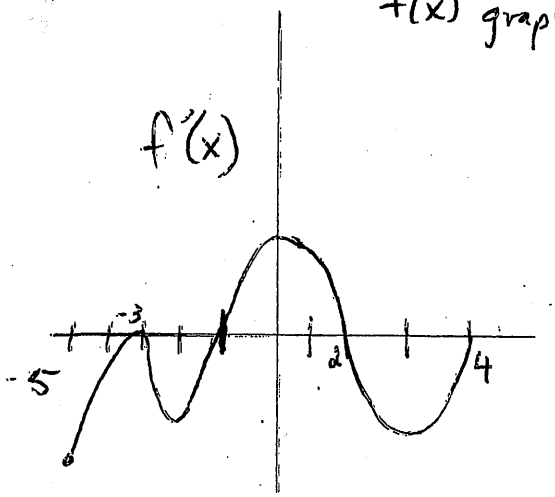
Derivative Graph Practice Problem: Given $f'(x)$ graph, find characteristics of $f(x)$ graph: a) Rel. min b) Rel. max c) increasing d) decreasing e) POI f) Concave up g) concave down h) sketch $f(x)$ graph given range is $[-5, 6]$ i) create sign line with all concavity, slope j) sketch $f''(x)$ graph



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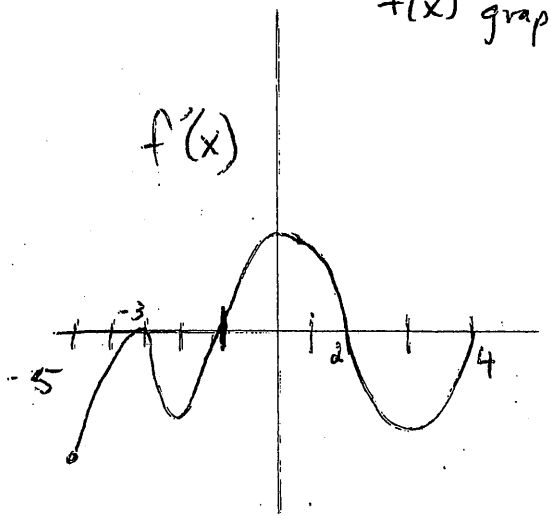
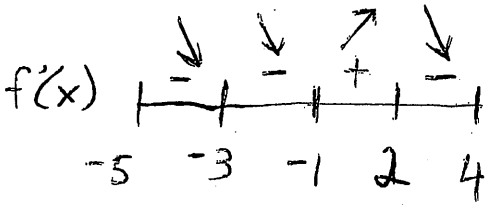
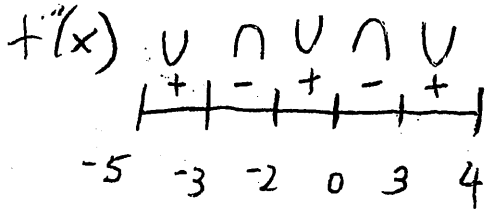
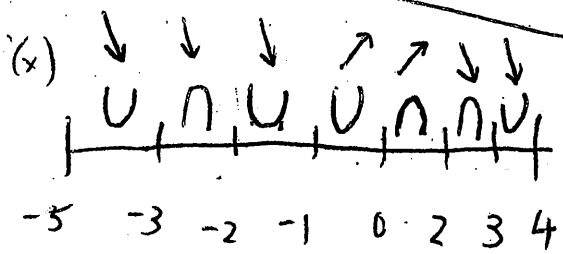




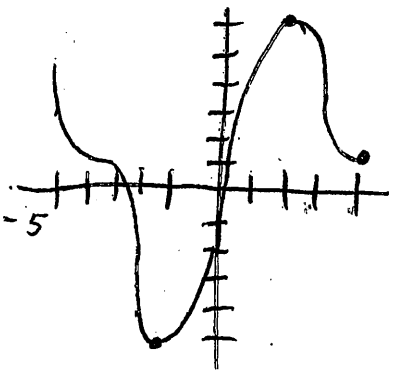
a) Rel. min at $x = -1$ b/c $f'(x)$ changes from $-$ to $+$
b) Rel. max at $x = 2$ b/c $f'(x)$ changes from $+$ to $-$
c) $f(x)$ increases $(-1, 2)$ b/c $f'(x) > 0$
d) $f(x)$ decreasing $(-5, -3) \cup (-3, -1) \cup (2, 4)$ b/c $f'(x) < 0$



e) POI at $x = -3, -2, 0, 3$ b/c $f''(x)$ changes sign
f) $f(x)$ concave up $(-5, -3) \cup (-2, 0) \cup (3, 4)$ b/c $f''(x) > 0$
g) $f(x)$ concave down $(-3, -2) \cup (0, 3)$ b/c $f''(x) < 0$



f(x) : Range [-5, 6]



f''(x)