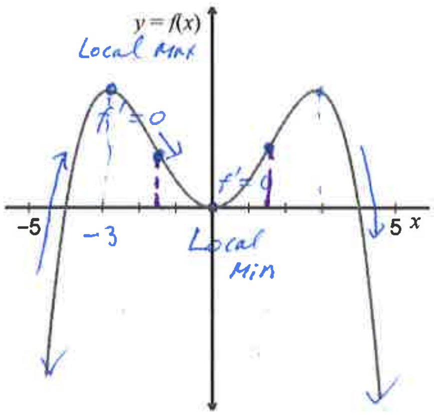
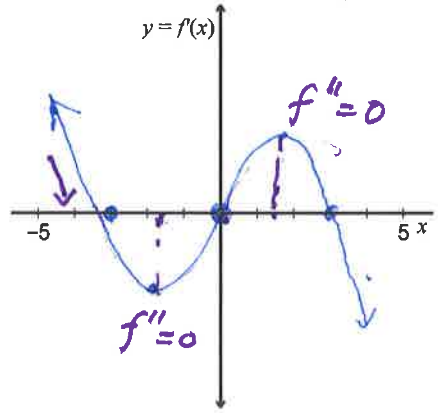
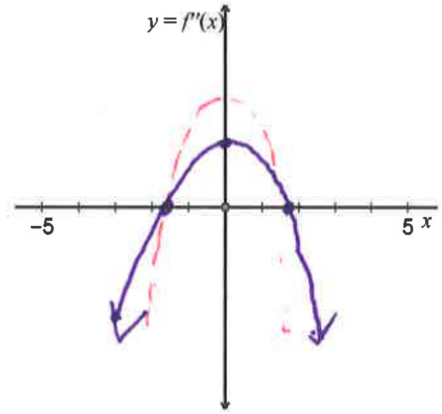
19D.2 Sketching f, f', and f'' Name______________________________

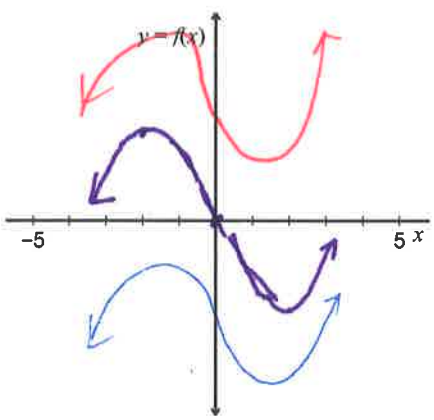
1. Given the graph of $f(x)$, sketch the graphs of $f'(x)$ and $f''(x)$.

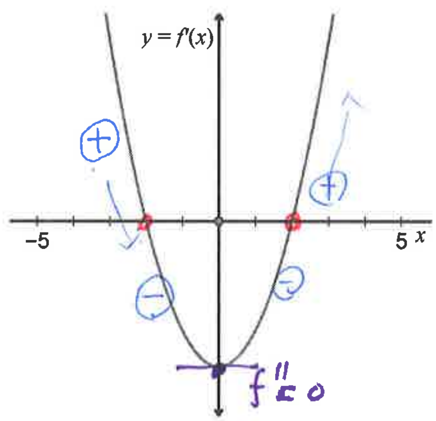


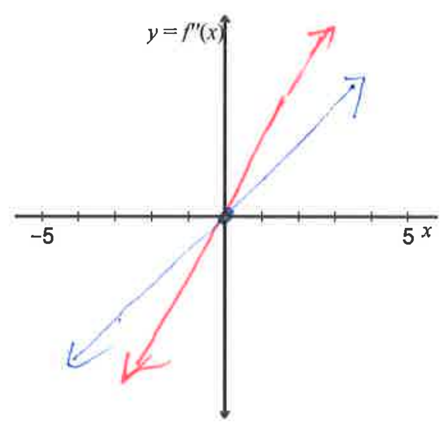




2. Use the graph of f' to sketch a graph of f and the graph of f''.







$x = -2$ (Local Max)

$x = 2$ (Local Min).

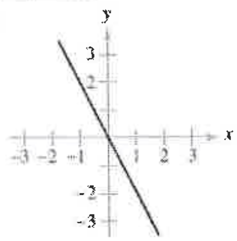
$x = 0$ (Inflection point)

19B-C Fun with Graphs **Class Copy**

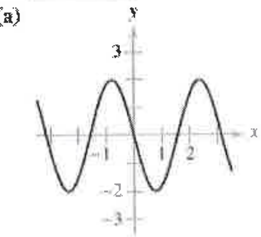
Match the graph of f in the left column with that of its derivative in the right column.

Graph of f | *Graph of f'*

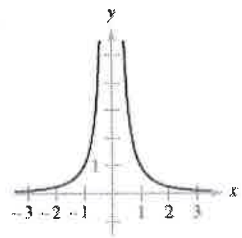
1\. D



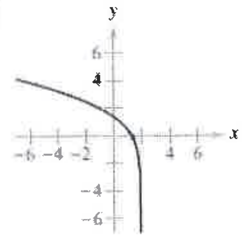
(a)



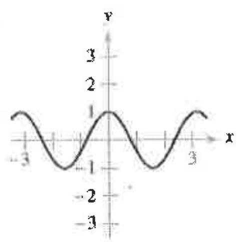
2\. C



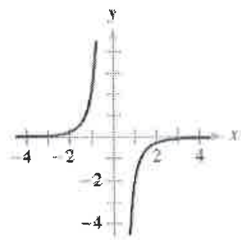
(b)



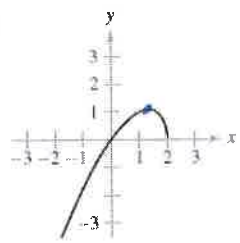
3\. A



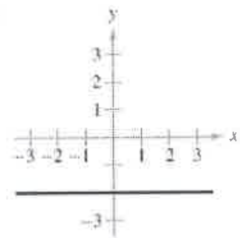
(c)



4\. B

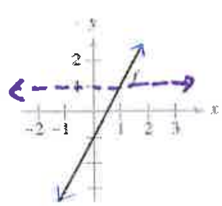


(d)

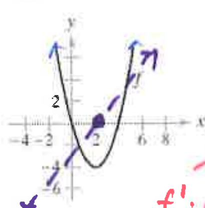


Given the graph of f, sketch the graph of f'.

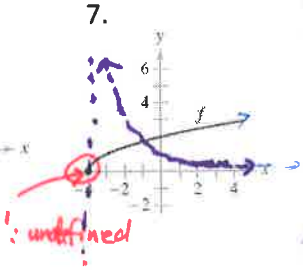
5\.



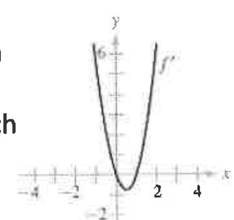
6\.



7\.



8\. Use the graph of f' to
a. identify the interval(s) on which f is increasing or decreasing
b. estimate the values of x at which f has a relative maximum or minimum.



a. Increase: $(-\infty, 0) \cup (1, \infty)$

Decreasing: $(0, 1)$

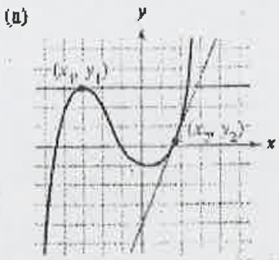
b. Local Max: $x=0$

Local Min: $x=1$.

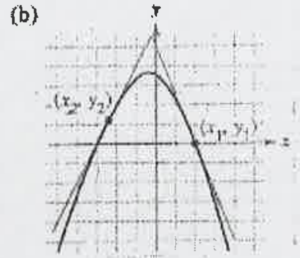
key.

1. Estimate the slope of tangent line at the points (x_1, y_1) and (x_2, y_2)

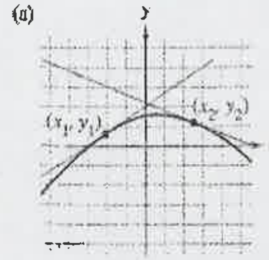
(a)



(b)



(a)



(b)

(x_1, y_1): $f'(x_1) = 0$

(x_2, y_2): $f'(x_2) \approx \frac{1}{2}$

(x_1, y_1): $f'(x_1) = -2$

(x_2, y_2): $f'(x_2) \approx 2$

(x_1, y_1): $f'(x_1) \approx \frac{2}{3}$

(x_2, y_2): $f'(x_2) \approx \frac{3}{4}$

(x_1, y_1): $f'(x_1) = \frac{3}{2}$

(x_2, y_2): $f'(x_2) = \frac{3}{2}$

2. For each function given, sketch the graph of the derivative function. Locate x-intercepts on the derivative graph by recalling that the derivative is zero if the tangent line is horizontal and has a high point or a low point where the derivative is steepest.