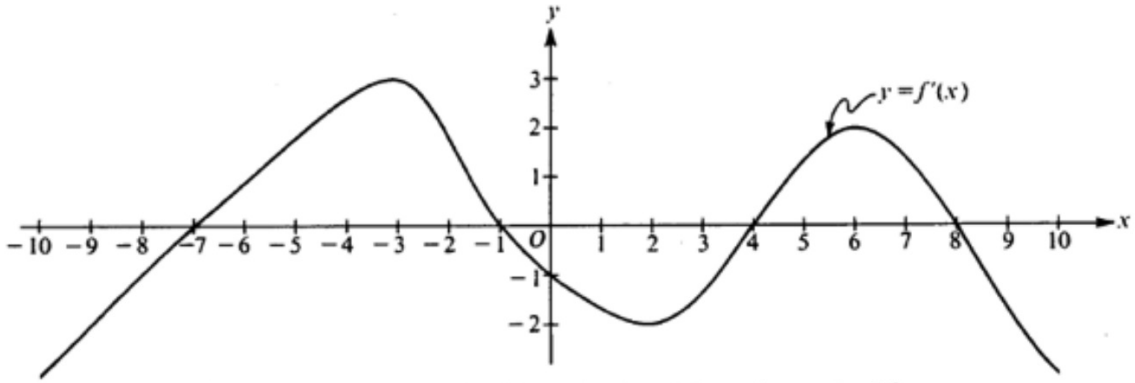
Interpreting Derivative Graphs

HW: worksheet posted on the website

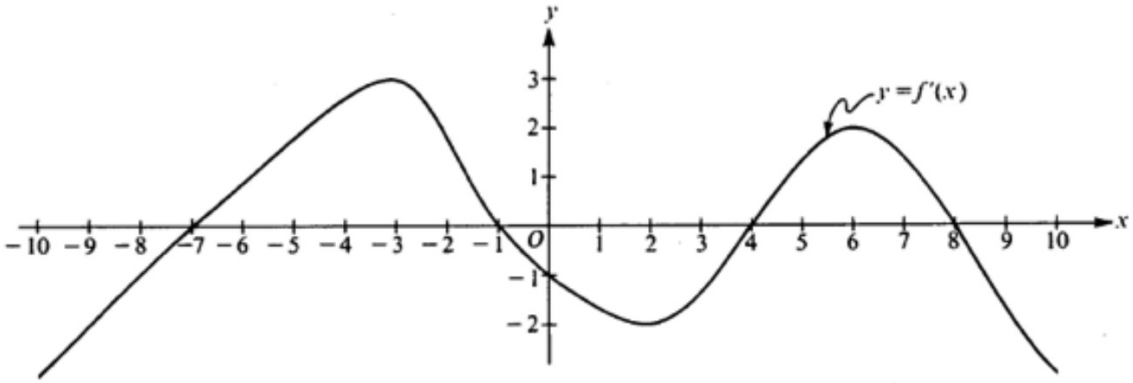
Derivative Graphs WS (second page)



Note: This is the graph of the derivative of f, not the graph of f.

Is f(x) differentiable on the entire interval?

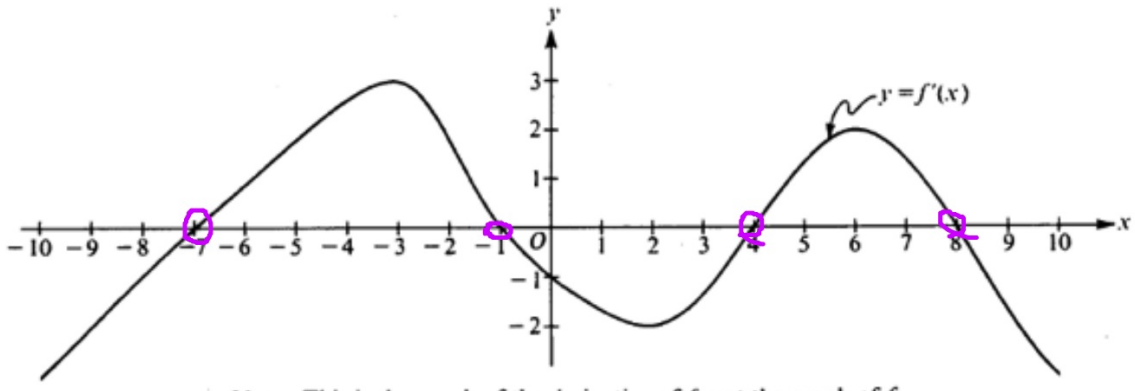
Yes; f'(x) is continuous



Note: This is the graph of the derivative of f, not the graph of f.

Is f(x) continuous on the entire interval?

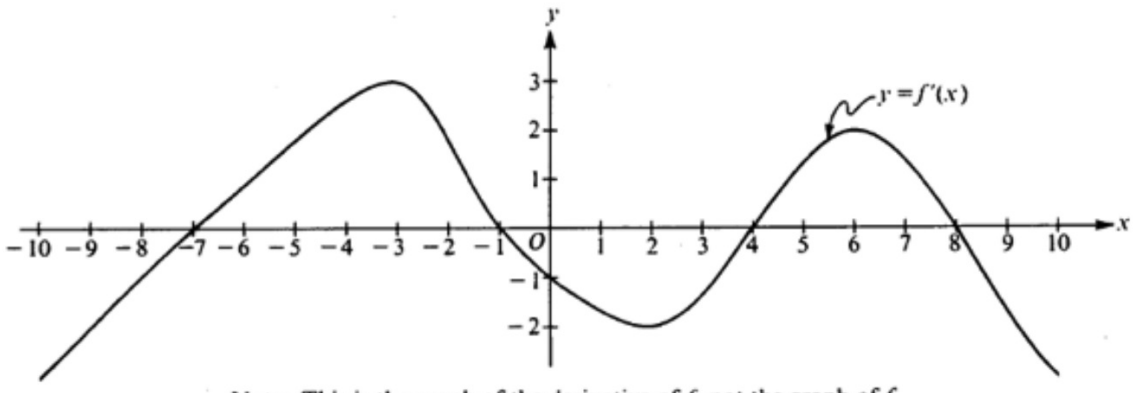
Yes because f'(x) is cotinuous



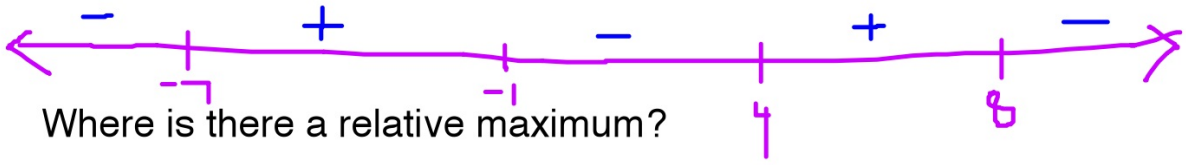
Note: This is the graph of the derivative of f, not the graph of f.

Where is the derivative zero?

x = -7, -1, 4, and 8 because f'(x) = 0 at these values

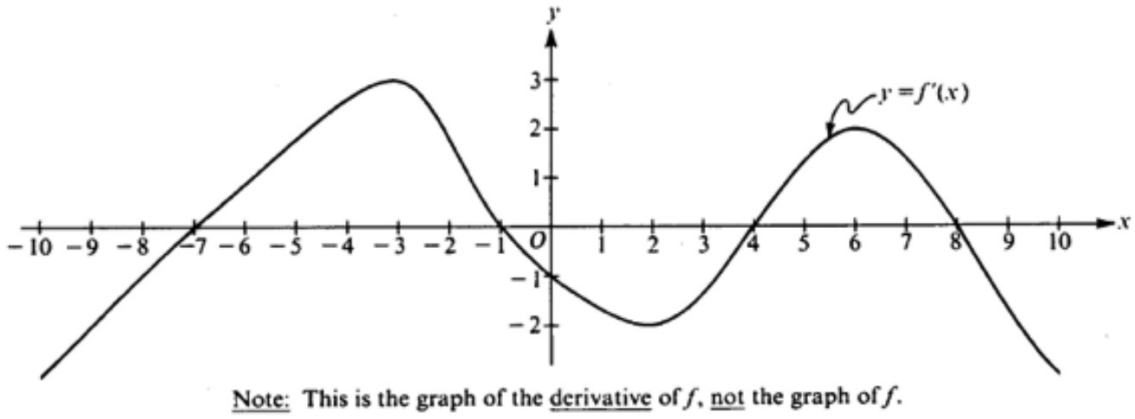


Note: This is the graph of the derivative of f, not the graph of f.



Where is there a relative maximum?

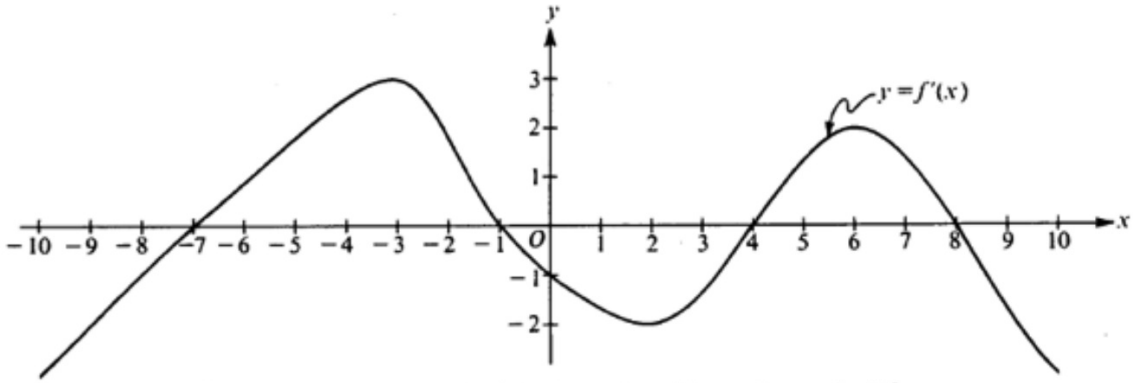
x = -1 and x = 8 because f' changes from positive to negative at these values



Note: This is the graph of the derivative of f, not the graph of f.

Where is there a relative minimum?

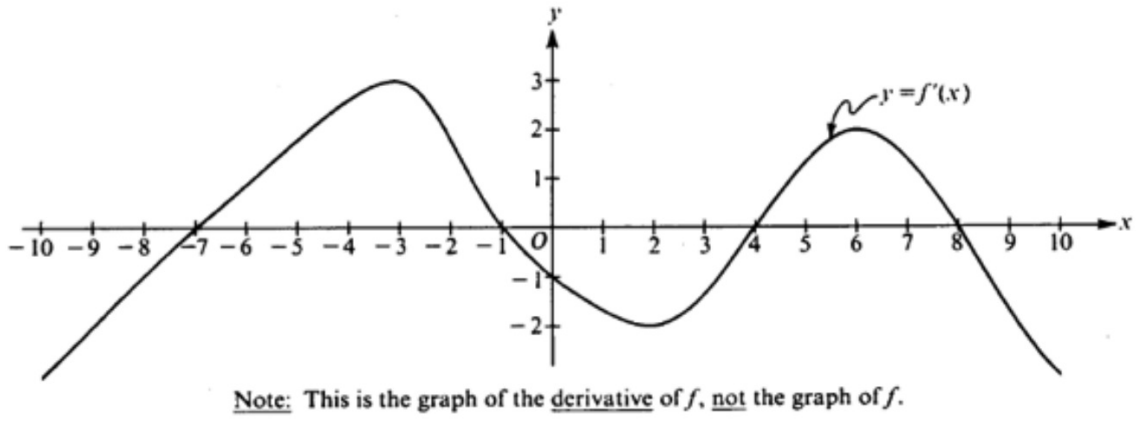
x = -7 and x = -4 because f' changes from negative to positive at these values



Note: This is the graph of the derivative of f, not the graph of f.

Where is f(x) increasing? **look for f' > 0**

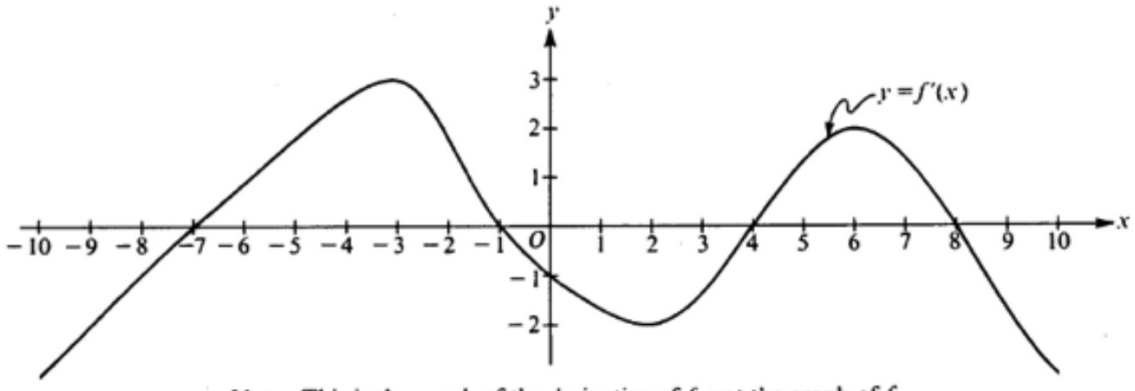
(-7, -1) and (4, 8) because f'>0 on these intervals



Note: This is the graph of the derivative of f, not the graph of f.

Where is f(x) decreasing?

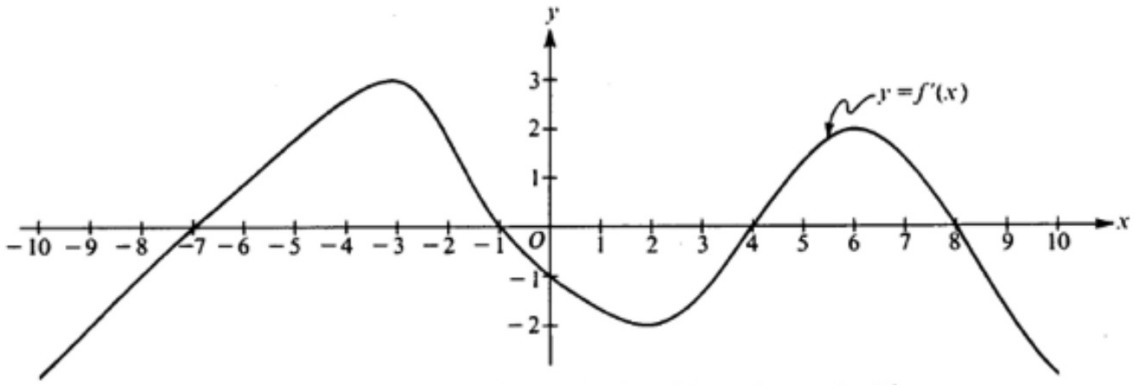
(-10, -7) U (-1, 4) U (8, 10) because f' < 0 on these intervals



Note: This is the graph of the derivative of f, not the graph of f.

Where are there point(s) of inflection? look for rel. extrema of f'

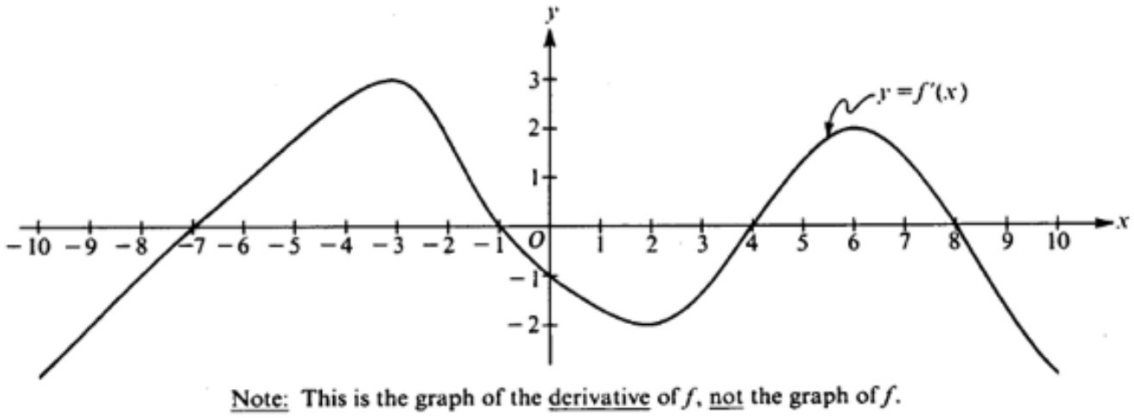
x = -3, 2, and 6 because f' has rel. extrema at these points



Note: This is the graph of the derivative of f, not the graph of f.

Where is f(x) concave up? **look for slope of f' > 0**

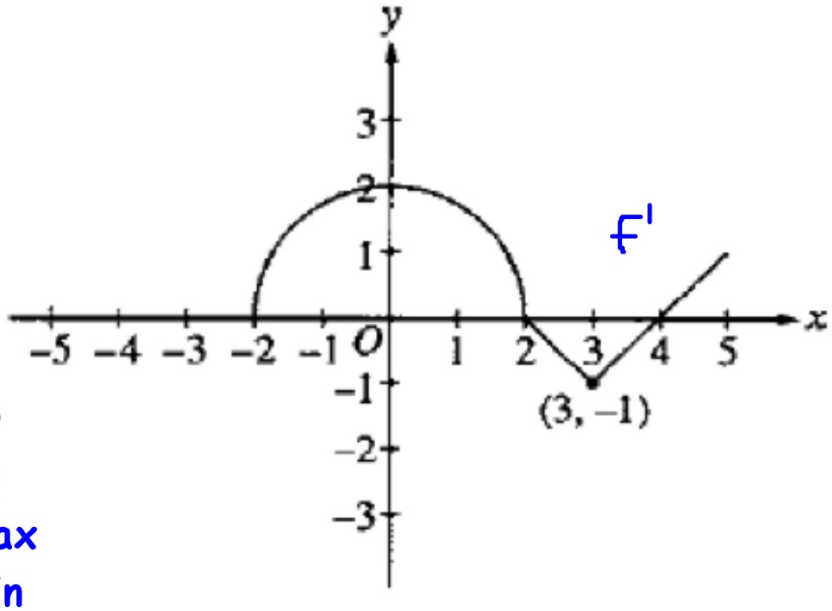
(-10, -3) U (2, 6) because the slope of f' > 0 OR f' is increasing on these intervals



Note: This is the graph of the derivative of f, not the graph of f.

Where is f(x) concave down? **slope of f' is negative**

(-3, 2) and (6, 10) because the slope of f' < 0 on these intervals



[-2, 5]

f incr

f dec

rel max

rel min

POI

CCU

CCD