MATH 131 **Learning Target 15 Quiz** Fall 2025

Name: _____

1. The function $f(x)$ (which you don't know) has *first and second derivatives*

$$f'(x) = e^x(x-4)(x+3)$$

$$f''(x) = e^x(x^2+x-13)$$

Using these provided derivatives, find all critical numbers of the original function $f(x)$, and then use the first or second derivative tests to classify them as local maximums, local minimums, or neither. Then give the intervals on which f is increasing or decreasing.

Use the middle of the page to show your work and record your answers at the bottom of the page.

Critical numbers:

Local maximum(s) at $x =$

Local minimum(s) at $x =$

f is increasing on the interval(s):

f is decreasing on the interval(s):

Name: _____

1. The function $f(x)$ (which you don't know) has *first and second derivatives*

$$f'(x) = x(x-1)(x+2)$$

$$f''(x) = 3x^2 + 2x - 2$$

Using these provided derivatives, find all critical numbers of the original function $f(x)$, and then use the first or second derivative tests to classify them as local maximums, local minimums, or neither. Then give the intervals on which f is increasing or decreasing.

Use the middle of the page to show your work and record your answers at the bottom of the page.

Critical numbers:

Local maximum(s) at $x =$

Local minimum(s) at $x =$

f is increasing on the interval(s):

f is decreasing on the interval(s):

Name: _____

1. The function $f(x)$ (which you don't know) has *first and second derivatives*

$$f'(x) = \frac{(x+4)(x-2)}{x-1}$$

$$f''(x) = \frac{x^2-2x+6}{(x-1)^2}$$

Using these provided derivatives, find all critical numbers of the original function $f(x)$, and then use the first or second derivative tests to classify them as local maximums, local minimums, or neither. Then give the intervals on which f is increasing or decreasing.

Use the middle of the page to show your work and record your answers at the bottom of the page.

Critical numbers:

Local maximum(s) at $x =$

Local minimum(s) at $x =$

f is increasing on the interval(s):

f is decreasing on the interval(s):

Name: _____

1. The function $f(x)$ (which you don't know) has *first and second derivatives*

$$f'(x) = (x+2)(x-1)^2$$

$$f''(x) = 3(x-1)(x+1)$$

Using these provided derivatives, find all critical numbers of the original function $f(x)$, and then use the first or second derivative tests to classify them as local maximums, local minimums, or neither. Then give the intervals on which f is increasing or decreasing.

Use the middle of the page to show your work and record your answers at the bottom of the page.

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