

Group Exam 3

Name: _____

Math 141-3, Calculus I

Name of group member: _____

Professor McNicholas

Name of group member: _____

Show your work and make sure your answers are well organized, easy to follow, and properly explained.

Problem 1:

Find the equation of the tangent line at $x = 1$ to the function

$$f(x) = \frac{\ln(x)}{\ln(3^x - x^3)} \quad (1)$$

Signature line: _____

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Problem 2:

Use the values in the table below to answer the following question.

x	$f(x)$	$g(x)$	$h(x)$	$f'(x)$	$g'(x)$	$h'(x)$	$f''(x)$
0	0	1	2	-1	4	-5	0
1	3	2	1	3	-2	-4	-4
2	1	0	3	-2	3	2	1
3	2	3	0	4	2	-3	2

From the second derivative, determine if $u(x) = \ln(f(x))$ is concave up or concave down at $x = 2$.

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Problem 3:

Use the values in the table below to answer the following question.

x	$f(x)$	$g(x)$	$h(x)$	$f'(x)$	$g'(x)$	$h'(x)$	$f''(x)$
0	0	1	2	-1	4	-5	0
1	3	2	1	3	-2	-4	-4
2	1	0	3	-2	3	2	1
3	2	3	0	4	2	-3	2

Find the equation of the tangent line to $u(x) = \sqrt{f(g(x)) + 4}$ at $x = 2$.

Signature line: _____