

Math 131 - Quiz 5

February 24, 2022

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due March 3.

1. (3 points) Evaluate each derivative.

(a) $\frac{d}{dx} \left[\sqrt[3]{x^2} \tan x \right]$

(b) $\frac{d}{dx} \left(\frac{x^2 + 3x - 7}{\cos x} \right)$

2. (2 points) Find an equation of the line tangent to the graph of $y = \frac{2x}{x-1}$ at the point where $x = -1$.

Turn over.

3. (2 points) The following table gives the values of $f(x)$, $f'(x)$, $g(x)$, and $g'(x)$ at selected values of x . Use the table for the following problems.

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

(a) Let $h(x) = 2f(x)g(x)$. Compute $h'(1)$.

(b) Let $h(x) = \frac{1}{x} + \frac{f(x)}{g(x)}$. Compute $h'(2)$.

4. (3 points) An object is thrown straight up from over the side of a 90-ft building with an initial velocity of 40 ft/sec. Assume that gravity is the only force acting on the object.

(a) Find the function $s(t)$ that gives the object's height at time t .

(b) Find the object's maximum height.

(c) When does the object hit the ground?