

# Math 131 - Quiz 5 (IC)

February 23, 2022

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

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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  $x = -1$ .

**Math 131 - Quiz 5 (TH)**

February 23, 2022

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. This 5-point, take-home portion of the quiz is due February 28.

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1. (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  $h'(2)$ .

*Turn over.*

2. (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?