

Name: \_\_\_\_\_

1. (6 points)  $\int (x + \sin^2(x) + \cos^2(x)) dx =$

2. (7 points) Suppose  $f(x)$  is a function for which  $f'(x) = 3x^2 + 1$ . The graph of  $f$  passes through the point  $(1, 3)$ . Find  $f(x)$ .

3. (7 points) What constant acceleration will cause a car to increase its velocity from 20 feet per second to 25 feet per second in 10 seconds?

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Name: \_\_\_\_\_

QUIZ 22 ♣

MATH 200  
November 30, 2022

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1. (6 points)  $\int \sqrt{x} (1 + x^2) dx =$

2. (7 points) Suppose  $f(x)$  is a function for which  $f'(x) = \frac{8}{x^3} + x$ . The graph of  $f$  passes through the point  $(2, 10)$ . Find  $f(x)$ .

3. (7 points) A rock is dropped from a 1600 foot tall building, with an initial velocity of 0 feet per second. The acceleration due to gravity is  $-32$  feet per second per second. How long does it take the for the rock to strike the ground?

Name: \_\_\_\_\_

1. (6 points)  $\int \frac{\sqrt{x} + 1}{\sqrt{x}} dx =$

2. (7 points) Suppose  $f(x)$  is a function for which  $f'(x) = 2x + \cos(x)$  and its graph passes through the point  $(\pi, 2)$ . Find  $f(x)$ .

3. (7 points) A stone is thrown vertically upward with an initial velocity of 8 feet per second. Assuming the acceleration due to gravity is  $-32$  feet per second per second, how long does it take the stone to stop rising?

Name: \_\_\_\_\_

1. (6 points)  $\int (3 - x)^2 dx =$

2. (7 points) Suppose  $f(x)$  is a function for which  $f'(x) = \sqrt{x} + 2$  and  $f(4) = 7$ . Find  $f(x)$ .

3. (7 points) A freight train travels on a straight track with a constant acceleration. At time  $t = 0$  its velocity is 10 miles per hour. Half an hour later (at  $t = 0.5$  hours) it is traveling at 70 mph. How far did it travel in the half hour period?