

Circle your Instructor: Faudree, Williams, Zirbes

\_\_\_\_\_ / 15

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

This is a 30 minute quiz. There are 15 problems. Books, notes, calculators or any other aids are prohibited. Calculators and notes are not allowed. **Your answers should be simplified unless otherwise stated.** They should begin  $y' =$  or  $f'(x) =$  or  $dy/dx =$ , etc. There is no partial credit. If you have any questions, please raise your hand.

Circle your final answer.

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For each function below, find the derivative.

1.  $g(x) = 3x^e - \ln 5$

2.  $F(\theta) = \theta \sec(\theta)$

3.  $f(x) = 10^x - \cot(5x)$

4.  $h(x) = (3x + 5)(2 - x)^4$

5.  $y = \frac{x}{2} - \frac{1}{3x}$

6.  $y = \frac{-4}{\sqrt{x^2 + 9}}$

7.  $F(x) = \frac{e^x}{x^2 + 2}$  (Use the Quotient Rule.)

8.  $h(x) = x^2(\ln x)(\sin x)$

9.  $y = 6x^{3/2}(x + 3)$

10.  $G(x) = \ln \left( \frac{xe^{3x}}{(x^2 + 2)^2} \right)$

11.  $y = \frac{x^3 - 5x + 4}{\sqrt{x}}$

12.  $f(x) = (3x + \cos(2x))^{-4}$  [You don't need to simplify, but use parentheses correctly.]

13.  $H(x) = \arcsin(e^{4x})$

14.  $g(x) = x^2 e^{1/x}$

15. Find  $dP/dr$  for  $P = C \arctan(kr) + 2Ck$  where  $C$  and  $k$  are fixed constants.