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Math 251 Fall 2017 **Derivative Proficiency, October 25th**

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.

For each function below, find the derivative.

1. $f(x) = \frac{5}{x^2} - \sqrt{2}x^2 - e^2$

2. $g(x) = 5^x + \csc(2x)$

3. $y = \frac{1}{3x} + \frac{7}{2-x}$

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4. $y = \frac{t^5 - 5t^3 - 2}{\sqrt[3]{t}}$

5. $h(x) = \frac{x^2 - x + 4}{\sin 3x}$

6. $y = \sqrt{\ln x + e^x}$

7. $F(\theta) = (\tan(\pi\theta))e^{2\theta}$

8. $z = 4\sqrt{t}(t^3 + 9t)$

9. $y = x \arctan(3x^2 + 1)$

10. $G(x) = \ln(x^2\sqrt{x^2 + 16})$

11. $h(x) = \sqrt[3]{x^2} + 4\sqrt[5]{x}$

12. $H(x) = x(\cos x)e^x$

13. $f(x) = \arccos(e^{5x})$

14. $g(x) = (2x + \sin(x^2))^3$

15. Find ds/dt for $s = C\ln(at - b)$ where a, b, and C are fixed constants.