

Name: _____ Class (circle): Sync. Online

- There are 12 points possible on this proficiency, one point per problem. **No partial credit will be given.**
- A passing score is 10/12.
- You have 60 minutes to complete this proficiency.
- No aids (book, calculator, etc.) are permitted.
- Do **not** simplify your expressions.
- Your final answers **must start with** $f'(x) =$, $dy/dx =$, or similar.
- **Box** your final answer.

Compute the derivatives of the following functions.

1. $f(x) = 15x^2 - \frac{3}{x} + x\sqrt{2} - \frac{15}{2}$

2. $g(t) = \cos(5t)(e^{2t} + 3)$

3. $y = \ln(\sec(5x))$

4. $h(x) = \frac{\tan(x)}{x + \ln(x)}$

5. $D(r) = \frac{r^2 - 5r + \pi}{17r^4}$

6. $r(\theta) = 8\pi - (\sin(b\theta))^2$, where b is a fixed constant

7. $h(s) = \sqrt{\frac{s^2 - 3s + 7}{6}}$

8. $f(x) = \ln(3x) \sec(x) e^{7x}$

9. $y = \arcsin(5x^3 - 4)$

10. $s(t) = e^3 - \ln(4) + \frac{t^2}{\sqrt{5}}$

11. $g(\theta) = \tan(\theta) \cos(\theta)$

12. Compute dy/dx if $y \cos(x) + e^y = xy$. You must solve for dy/dx .