

Name: _____

**No calculators allowed on this test. No partial credit. Do all the intermediate steps!
Check your work!**

In each case, find an expression for dy/dx .

1. $y = \frac{11}{2\sqrt{x^2 - x + 9}}$

2. $y = \left(\frac{\sqrt{x}}{x^3 - 1}\right)^7$

3. $y = e^x + x^e + e$

4. $y = (x^2 + 1)(\sqrt[3]{x^2 + 3})$

5. $y = \frac{e^{\tan x}}{x^2 + x + 5}$

6. $y = \sin^3(5x^2)$

7. $\sin(xy) = x^2 - y$

8. $y = e^{2x} \sec(2x) \tan(2x)$

9. $x^2(x - y)^2 = x^2 - y^2$

$$10. y = \ln \left(\sqrt{\frac{(x+1)^5}{(x+2)^{20}}} \right)$$

$$11. y = \sqrt[3]{\frac{x(x+2)}{x^2+1}}$$

12. $y = \sqrt{x} e^{x^2-1}$

13. $y = \frac{t^3 + 5}{t\sqrt{t}}$

14. $y = \frac{5(e^{2t} + e^{-2t})}{3(e^{2t} - e^{-2t})}$