

GATEWAY EXAM

Math 141

Name: _____

For each problem, find $\frac{dy}{dx}$.

1. $y = 3x^6 - 3x^5 - x^{-1/4} - 5x - 3e^{2x} + 2$

2. $y = \left(-2\sqrt[3]{x} - x^2\right)^5$

3. $y = 4^{6 \tan(2x)} + 3e^x$

4. $y = 2 \ln \left(\sec(5x^2) + e^{2x^4} \right)$

5. $y = 3x \cos(x^2)4^x$

$$6. y = \frac{4 \sin(3x + 1) - 6x}{2x - 7}$$

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

$$8. y = \frac{(3 + 4x)^5 e^{4x-1}}{\sqrt{5}}$$

$$9. xy^5 = (\csc x)^6 - 5y$$

10. Find the second derivative of $y = 3 \arctan(2x)$