

MAC 2311 Derivative Worksheet

1. $\frac{d}{dx} \left(\frac{e^x}{\sqrt{1-x}} \right)$

2. $\frac{d}{dx} (\ln(xe^x))$

3. $\frac{d}{dx} (e^{2x} \tan(x))$

4. $\frac{d}{dx} (x \sin(e^x))$

5. $\frac{d}{dx} \left(\frac{e^{2x}}{e^{3x} + 1} \right)$

6. $\frac{d}{dx} \left(e^{(x^e)} \right)$

7. $\frac{d}{dx} (x^2 \ln(\sin x))$

$$8. \frac{d}{dx} \left(\ln \left(\ln \left(x + e^x \right) \right) \right)$$

$$9. \frac{d}{dx} \left(\sqrt{e^{2 \sec x}} \right)$$

$$10. \frac{d}{dx} \left(\ln \left(\sqrt{1 + e^{2x}} \right) \right)$$

$$11. \frac{d}{dx} \left(\sqrt{x} \ln \left(e^{\sqrt{x}} \right) \right)$$

$$12. \frac{d}{dx} \left(\sqrt{\sin(e^2)} - 9 \right)$$

$$13. \frac{d}{dx} \left(\ln \left(x^3 \sin x \right) \right)$$

$$14. \frac{d}{dx} \left(e(\ln x)^e \right)$$

15. Use implicit differentiation to find the equation of the tangent line to the curve $xe^y - ye^x = 1$ at the point $(0, 1)$. Do not approximate e in your final answer.