

## Homework 17 Final Answers

$$1. y' = -4e^{-2x} \sin(4x) - 2e^{-2x} \cos(4x)$$

$$12. \frac{x^{e+1}}{e+1} + e^x + c$$

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

$$13. \frac{1}{7} e^{x^7} + c$$

$$3. y' = \cos(e^x) \cdot e^x + e^{\sin x} \cdot \cos x$$

$$14. \frac{(4+e^x)^6}{6} + c$$

$$4. y' = -4 \sin(e^{4x}) \cdot e^{4x} - 4 e^{\cos(4x)} \cdot \sin(4x)$$

$$15. \frac{e^{6x}}{6} - \frac{1}{6e^{6x}} + c$$

$$16. 2\sqrt{1+e^x} + c$$

Product Rule

$$5. f'(x) = e^{x^2 \cdot \tan(2x)} \left( x^2 \cdot \sec^2(2x) \cdot 2 + \tan(2x) \cdot (2x) \right)$$

$$17. e^{\tan x} + c$$

$$6. y' = e^{-\frac{1}{x}} (1 + 2x)$$

$$18. \frac{e^{2x}}{2} + 2x - \frac{1}{2e^{2x}} + c$$

$$7. y' = \frac{3e^{3x}}{\sqrt{1+2e^{3x}}}$$

$$19. -\frac{2}{9} (1+e^{-3x})^{3/2} + c$$

$$8. y' = e^{(e^x)} \cdot e^x$$

$$20. -e^{1/x} + c$$

$$9. f'(x) = \frac{4}{(e^x + e^{-x})^2}$$

$$21. -\frac{1}{e^x} + 2x + e^x + c$$

$$10. y = \frac{e^2}{4} x$$

11. Absolute Max Occurs AT  $x=0$  and Max Value is  $f(0) = 0 - e^0 = -1$