

Find dy/dx for each of the following functions.

1. $y = e^{2x}$

2. $y = 2^{3x-1}$

3. $y = e^{\sin x}$

4. $y = 3^{\sec x}$

5. $y = e^{x^2}$

6. $y = 5^{x^3}$

7. $y = e^{5x^2}$

8. $y = \frac{e^x}{x}$

9. $y = xe^x$

10. $y = e^x \tan x$

11. $y = e^{2x} + e^x$

12. $y = e^{x \cos x}$

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Integrate each of the following.

13. $\int e^{3x} dx =$

14. $\int 2^x dx =$

15. $\int (e^{2x} + e^x) dx =$

16. $\int 3^{5x} dx =$

17. $\int \csc^2(3x) e^{\cot(3x)} dx =$

18. $\int e^{2x} \cos(e^{2x}) dx =$

19. $\int x e^{x^2} dx =$

19. $\int e^x \sec^2(e^x) dx =$

21. $\int x^2 e^{x^3} dx =$

22. $\int \frac{e^{\sqrt{x}} dx}{\sqrt{x}} =$

23. $\int \cos x e^{\sin x} dx =$

24. $\int 2^x \sin(2^x) dx =$