

1-21: Differentiate the Function

1. $f(x) = e^5$	2. $f(t) = 2 - \frac{2}{3}t$	3. $F(x) = \frac{3}{4}x^8$
4. $h(x) = (x-2)(2x+3)$	5. $g(t) = 2t^{\frac{3}{4}}$	6. $A(s) = -\frac{12}{s^5}$
7. $y = x^{\frac{5}{3}} - x^{\frac{2}{3}}$	8. $h(t) = \sqrt[4]{t} - 4e^t$	9. $\sqrt{x}(x-1)$
10. $3e^x + \frac{4}{\sqrt[3]{x}}$	11. $y = \frac{x^2 + 4x + 3}{\sqrt{x}}$	12. $y = \frac{\sqrt{x+x}}{x^2}$
13. $k(r) = e^r + r^e$	14. $f(x) = x^3 - 4x + 6$	15. $f(t) = 1.4t^5 - 2.5t^2 + 6.7$
16. $g(x) = x^2(1-2x)$	17. $S(p) = \sqrt{p} - p$	18. $S(R) = 4\pi R^2$
19. $y = x^8 + 12x^5 - 4x^4 - 6x + 5$	20. $y = \frac{3x^2 - \sqrt{x} + x}{x}$	21. $u = \sqrt[5]{t} + 4\sqrt{t^5}$

Derivatives: Polynomials & Exponential Functions

22-24: Find an equation of the tangent line to the curve at the given point.

22. $f(x) = 2x^3 + 6$, $(-1, 4)$

23. $y = \sqrt[4]{x}$, $(1, 1)$

24. $y = x^4 + 2x^2 - x$, $(1, 2)$

Answers:

1.) $f'(x) = 0$

2.) $f'(t) = -\frac{2}{3}$

3.) $F'(x) = 6x^7$

4.) $h'(x) = 4x - 1$

5.) $g'(t) = -\frac{3}{2}t^{-\frac{7}{4}}$

6.) $A'(s) = 60s^{-6} = \frac{60}{s^6}$

7.) $y' = \frac{5}{3}x^{\frac{2}{3}} - \frac{2}{3}x^{-\frac{1}{3}}$

8.) $h'(t) = \frac{1}{4}t^{-\frac{3}{4}} - 4e^t$

9.) $\frac{3}{2}x^{\frac{1}{2}} - \frac{1}{2}x^{-\frac{1}{2}}$

10.) $3e^x - \frac{4}{3}x^{-\frac{4}{3}}$

11.) $y' = \frac{3}{2}x^{\frac{1}{2}} + 2x^{-\frac{1}{2}} - \frac{3}{2}x^{-\frac{3}{2}}$

12.) $y' = -\frac{3}{2}x^{-\frac{5}{2}} - x^{-2}$

13.) $k'(r) = e^r + e \cdot r^{e-1}$

14.) $f'(x) = 3x^2 - 4$

15.) $f'(t) = 7t^4 - 5t$

16.) $g'(x) = 2x - 6x^2$

17.) $s'(p) = \frac{1}{2}p^{-\frac{1}{2}} - 1$

18.) $s'(r) = 8\pi r$

19.) $y' = 8x^7 + 60x^4 - 16x^3 - 6$

20.) $y' = 3 + \frac{1}{2}x^{-\frac{3}{2}}$

21.) $u' = \frac{1}{5}t^{-\frac{4}{5}} + 10t^{\frac{3}{2}}$

22.) $y - 4 = 6(x + 1)$

23.) $y - 1 = \frac{1}{4}(x - 1)$

24.) $y - 2 = 7(x - 1)$