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3. $y = x^4 + 3x^2 - 6$

$y' = 4x^3 + 6x^{2-1} - 0$

$y' = 4x^3 + 6x$

4. $y = 6x^3 - x^2$

$y' = 3(6x^2) - 2x^{2-1}$

$y' = 18x^2 - 2x$

5. $y = \frac{x^5}{a+b} - \frac{x^2}{a-b}$

$y' = \frac{5x^{5-1}}{a+b} - \frac{\sqrt{x^2}}{a-b}$

$y' = \frac{5x^4}{a+b} - \frac{2x}{a-b}$

6. $y = \frac{x^3 - x^2 + 1}{5}$

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

8. $y = 6x^{\frac{7}{2}} + 4x^{\frac{5}{2}} + 2x$

$y' = \frac{7}{2} \cdot 6x^{\frac{5}{2}} + \frac{5}{2} 4x + 2$

$y' = \frac{7}{2} \cdot \frac{12}{2} = \frac{84}{4} x^{\frac{5}{2}} + \frac{5}{2} \cdot \frac{8}{2} = \frac{40}{4} x^{\frac{3}{2}} + 2$

$y' 21x^{\frac{5}{2}} + 10x^{\frac{3}{2}} + 2$

7. $y = 2ax^3 - \frac{x^2}{b} + c$

$y' = 6ax^2 - \frac{2x}{b}$

9. $y = \sqrt{3x} + \sqrt[3]{x} + \frac{1}{x}$

$y' = 3x^{1/2} + x^{1/3} + x^{-1}$

$y' = \frac{1}{2\sqrt{3x}} + \frac{1}{3x^{\frac{2}{3}}} + \left(-\frac{1}{x^2}\right)$

$y' = \frac{1}{2\sqrt{3x}} \cdot 3 + \frac{1}{3x^{\frac{2}{3}}} - \frac{1}{x^2}$

$y' = \frac{3}{2\sqrt{x}} + \frac{1}{3\sqrt[3]{x^2}} - \frac{1}{x^2} = y' = \frac{3}{2\sqrt{x}} + \frac{1}{3\sqrt[3]{x^2}} - \frac{1}{x^2}$

Luis Ricardo Reyes Villar

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10. $y=\frac{(x+1)^3}{x^{\frac{3}{2}}}$

$y'=\frac{3(x+1)^2\cdot(x-1)}{2x^{\frac{5}{2}}}$

11. $y=\sqrt[3]{x^2}-2\sqrt{x}+5$

$y'=x^{2/3}-2x^{1/2}+5$

$y'=\frac{2}{3}x^{-1/3}-x^{-1/2}$

$y'=\frac{2}{3}\frac{1}{\sqrt[3]{x}}-\frac{1}{\sqrt{x}}$

12. $y=\frac{ax^2}{\sqrt[3]{x}}+\frac{b}{x\sqrt{x}}-\frac{\sqrt[3]{x}}{\sqrt{x}}$

$y'=ax^{\frac{2}{3}}-x^{1/3}+$

13. $y=(1+4x^3)(1+2x^2)$

$y'=12x^2(1+2x^2)+(1+4x^3)4x$

$y'=12x^2+24x^4+4x+16x^4$

$y'=40x^4+12x^2+4x$

14. $y=x(2x-1)(3x+2)$

$y'=((2x-1)(3x+2))(x)$

$y'=(1)(2x-1)(3x+2)+(x)(2)\cdot(3x+2)+(2x-1)(3)$

$y'=1\cdot(2x-1)(3x+2)+(x)(6x+4+6x-3)$

$y'=1\cdot(2x-1)(3x+2)+(x)(12x+1)$

$y'=(2x-1)(3x+2)+(12x^2+1x)$

$y'=(6x^2+4x-3x-2+12x^2+1x)$

$y'=18x^2+2x-2$

15. $y=(2x-1)(x^2-6x+3)$

$y'=(2)(x^2-6x+3)+(2x-1)(2x-6)$

$y'=2x^2-12x+6+4x^2-12x-2x+6$

$y'=6x^2-26x+12$

16. $y=\frac{2x^4}{b^2-x^2}$

$y'=\frac{8x^3(b^2-x^2)-2x^4(2b-2x)}{(b^2-x^2)^2}$

$y'=$

17. $y=\frac{a-x}{a+x}$

$y'=\frac{1\cdot(a+x)-(a-x(1))}{(a+x)^2}$

$y'=\frac{2x}{(a+x)^2}$

18. $y=\frac{t^3}{1+t^2}$

$y'=\frac{3t^2(1+t^2)-t^3(2t)}{(1+t^2)^2}$

$y'=\frac{t^2(3+t^2)-2t^4}{(1+t^2)^2}$

Norma

19. $f(s)=\frac{(s+4)^2}{s+3}$

$f'(s)=\frac{2(s+4)\cdot 1-(s+4)^2\cdot 1}{s+3^2}$

$f'(s)=\frac{2(s+4)-(s+4)^2}{s+3^2}$

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

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

$y'=3x^4-3x^3-6x^2-2x^4+x^2-2x+1$

$y'=\frac{x^4-2x^3-6x^2-2x+1}{(x^2-x-2)^2}$

21. $y=(2x^2-3)^2$

$y'=2(2x^2-3)\cdot 4x$

$y'=8x(2x^2-3)$

22. $y=(x^2+a^2)^5$

$y'=5(x^2+a^2)^4\cdot 2x+2a$

$y'=10x+10a(x^2+a^2)^4$

23. $y=\sqrt{x^2+a^2}$

$y'=(x^2+a^2)^{1/2}$

$y'=\frac{1}{2(x^2+a^2)^{-1/2}\cdot(2x)+2a}$

$y'=\frac{2x}{2\cdot(x^2+a^2)^{1/2}}$

$y'=\frac{x}{\sqrt{x^2+a^2}}$

24. $y=(a+x)\sqrt{a-x}$

$y'=(a+x)(a-x)^{1/2}$

$y'=(a-x)^{1/2}+(a+x)\left(\frac{1}{2}(a-x)^{-1/2}\right)$

$y'=$

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25. $y = \sqrt{\frac{1+x}{1-x}}$

$y' = \left(\frac{1+x}{1-x}\right)^{1/2}$

$y' = \frac{1}{2}\left(\frac{1+x}{1-x}\right)^{-\frac{1}{2}} \cdot \frac{(1-x)-(1+x)}{(1-x)^2}$

$y' = \frac{1}{2}\left(\frac{1-x}{1+x}\right)^{\frac{1}{2}} \cdot \frac{(1-x)\cdot(1+x)}{(1-x)^2}$

$y' = \frac{1}{2}\sqrt{\frac{1-x}{1+x}} \cdot \frac{1-x-1+x}{(1-x)^2}$

$y' = \frac{1}{2}\sqrt{\frac{1-x}{1+x}} \cdot \frac{-2x}{(1-x)^2}$

$y' = \frac{-2x}{2(1+x)^2} \cdot \sqrt{\frac{1-x}{1+x}}$

26. $y = \frac{2x^2-1}{x\sqrt{1+x^2}}$

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

$y' = \frac{4x\left(x(1+x^2)^{1/2}\right) - 2x^2-1\left(x\left(x\frac{1}{\sqrt{1+x^2}}\right)\right)}{(x(1+x^2)^{1/2})^2}$

$y' = \frac{4x\left(\frac{1}{x\sqrt{1+x^2}}\right) - 2x^2-1\left(\frac{x}{x\sqrt{1+x^2}}\right)}{(x(1+x^2)^{1/2})^2}$

$y' = \frac{\frac{4x}{x\sqrt{1+x^2}} - \frac{2x^2+1}{x\sqrt{1+x^2}}}{(x\sqrt{1+x^2})^2}$

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27. $y = \sqrt[3]{x^2+x+1}$

$y = (x^2+x+1)^{1/3}$

$y' = \frac{1}{3}(x^2+x+1)^{-2/3} \cdot (2x+1)$

$y' = \frac{2x+1}{3\sqrt[3]{(x^2+x+1)^2}}$

28. $y = (1+\sqrt[3]{x})^3$

$y' = 3(1+\sqrt[3]{x})^2 \cdot 0$

$y' = (1+\sqrt[3]{x})^2 \cdot 0$

29. $y = \sin^2 x$

$y' = 2\sin x \cdot \cos x$

$y = \sin 2x$

30. $y = 2\sin x + \cos 3x$

$y' = 2\cos x - \sin 3x \cdot 3$

$y' = 2\cos x - 3\sin 3x$

31. $y = \tan(ax+b)$

$y' =$

32. $y = \frac{\sin x}{1+\cos x}$

$y' = \frac{\cos x}{1+\cos x}$

$y' = \frac{1}{1+\cos x}$

33. $y = \sin 2x \cos 3x$

$y' = \cos 2x \cdot 2(\cos 3x) - \sin 2x(-\sin 3x \cdot 3)$

$y' = 2\cos 2x \cos 3x - 3\sin 2x \sin 3x$

34. $y = \cot^2 5x$

$y' = -\csc^2 5x \cdot 2\cot 5x$

$y' = -10\cot 5x \csc^2 5x$

35. $f(t) = t\sin t + t\cos t$

$f'(t) = t\cos t - \sin t$

$f'(t) = t\cos t$

36. $f(t) = \sin^3 t \cos t$

$f'(t) = \sin 2t$

37. $y = a\sqrt{\cos 2x}$

$y' = a(\cos 2x)^{1/2}$

$y' = a\frac{1}{2}(\cos 2x)^{-1/2} \cdot -\sin 2x$

$y' = \frac{a \cdot -\sin 2x}{\sqrt{\cos 2x}}$

38. $y = \frac{1}{2}\tan^2 x$

$y' = \tan x \sec^2 x$

39. $y = \ln \cos x$

$y' = \frac{1}{\cos x} - \sin x$

$y' = -\tan x$

40. $y = \ln \tan x$

$y' = \frac{1}{\tan x} \sec^2 x$

$y' = \frac{2}{\sin 2x}$

41. $y = \ln \sin^2 x$

$y' = \frac{1}{\sin^2 x}(\cos x \operatorname{sen} x)$

$y' = 2\cot x$

42. $\frac{\tan x - 1}{\sec x}$

$y' = \frac{\tan x - 1 \cdot (\sec x \tan x) - \sec^2 x - 1 \sec x}{\sec x^2}$