

Homework Math 140

Lecture 8, 9,10

Will be Quizzed on March 28

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Problem 1 (Textbook, page 136, 1-44). Compute the derivative.

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| 1. $f(x) = 2^{40}$. | 17. $y = \frac{x^2+4x+3}{\sqrt{x}}$. | 31. $y = \frac{x^3}{1-x^2}$. |
| 2. $f(x) = \pi^2$. | 18. $y = \frac{\sqrt{x}+x}{x^2}$. | 32. $y = \frac{x+1}{x^3+x-2}$. |
| 3. $f(t) = 2 - \frac{2}{3}t$. | 19. $H(x) = (x + x^{-1})^3$. | 33. $y = \frac{v^3-2v\sqrt{v}}{v}$. |
| 4. $F(x) = \frac{3}{4}x^8$. | 20. $g(u) = \sqrt{2}u + \sqrt{3u}$. | 34. $y = \frac{t}{(t-1)^2}$. |
| 5. $f(x) = x^3 - 4x + 6$. | 21. $u = \sqrt[5]{t} + 4\sqrt{t^5}$. | 35. $y = \frac{t^2+2}{t^4-3t^2+1}$. |
| 6. $f(t) = \frac{1}{2}t^6 - 3t^4 + t$. | 22. $v = \left(\sqrt{x} + \frac{1}{\sqrt[3]{x}}\right)^2$. | 36. $g(t) = \frac{t-\sqrt{t}}{t^{1/3}}$. |
| 7. $g(x) = x^2(1-2x)$. | 23. $f(x) = (1+2x^2)(x-x^2)$. | 37. $y = ax^2 + bx + c$. |
| 8. $h(x) = (x-2)(2x+3)$. | 24. $f(x) = \frac{x^4-5x^3+\sqrt{x}}{x^2}$. | 38. $y = A + \frac{B}{x} + \frac{C}{x^2}$. |
| 9. $g(t) = 2t^{-3/4}$. | 25. $V(x) = (2x^3+3)(x^4-2x)$. | 39. $f(t) = \frac{2t}{2+\sqrt{t}}$. |
| 10. $B(y) = cy^{-6}$. | 26. $L(x) = (1+x+x^2)(2-x^4)$. | 40. $y = \frac{cx}{1+cx}$. |
| 11. $A(s) = -\frac{12}{s^5}$. | 27. $F(y) = \left(\frac{1}{y^2} - \frac{3}{y^4}\right)(y+5y^3)$. | 41. $y = \sqrt[3]{t}(t^2+t+t^{-1})$. |
| 12. $y = x^{5/3} - x^{2/3}$. | 28. $J(v) = (v^3-2v)(v^{-4}+v^{-2})$. | 42. $y = \frac{u^6-2u^3+5}{u^2}$. |
| 13. $S(p) = \sqrt{p} - p$. | 29. $g(x) = \frac{1+2x}{3-4x}$. | 43. $f(x) = \frac{x}{x+\frac{c}{x}}$. |
| 14. $y = \sqrt{x}(x-1)$. | 30. $f(x) = \frac{x-3}{x+3}$. | 44. $f(x) = \frac{ax+b}{cx+d}$. |
| 15. $R(a) = (3a+1)^2$. | | |
| 16. $S(R) = 4\pi R^2$. | | |

Problem 2 (Textbook, page 146, problems 1-19). Compute the derivative.

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| 1. $f(x) = 3x^2 - 2\cos x$. | 8. $y = u(a\cos u + b\cot u)$. | 14. $y = \frac{1-\sec x}{\tan x}$. |
| 2. $f(x) = \sqrt{x}\sin x$. | 9. $y = \frac{x}{2-\tan x}$. | 15. $h(\theta) = \theta \csc \theta - \cot \theta$. |
| 3. $f(x) = \sin x + \frac{1}{2}\cot x$. | 10. $y = \sin \theta \cos \theta$. | 16. $y = x^2 \sin x \tan x$. |
| 4. $y = 2\sec x - \csc x$. | 11. $f(\theta) = \frac{\sec \theta}{1+\sec \theta}$. | 17. $f(x) = \csc x$. |
| 5. $y = \sec \theta \tan \theta$. | 12. $y = \frac{\cos x}{1-\sin x}$. | 18. $f(x) = \sec x$. |
| 6. $g(t) = 4\sec t + \tan t$. | 13. $y = \frac{t \sin t}{1+t}$. | 19. $f(x) = \cot x$. |
| 7. $y = c \cos t + t^2 \sin t$. | | |