Name:

AP Physics C
M. Lam

Power, Constant and Sum Rules

Block:

Differentiate each function with respect to *x*.

1. $f(x) = x^4$

2. $f(x) = 4x^3$

3. $f(x) = \dfrac{x^3}{4}$

4. $h(x) = 3x^2 + 9x + 1$

5. $v(x) = 9$

6. $r(x) = 4x^4 - 8x^2 - 5$

7. $f(x) = x - x^{-2} - x^{-3}$

8. $b(x) = -4x^4 + 10x^3 - 3x - 20$

9. $a(x) = \dfrac{x^{\frac{1}{2}}}{3}$

10. $f(x) = 8x^{\frac{1}{2}} - 9 + 9^{-\frac{1}{3}}$

11. $g(x) = \dfrac{3}{4x^3}$

12. $f(x) = 12\sqrt{x}$

13. $f(x) = \sqrt[3]{4x}$

14. $h(x) = \dfrac{2}{5}\sqrt{x} + \dfrac{1}{8}\sqrt[3]{x} - 5$

15. $c(x) = \dfrac{2}{3}\sqrt{3} + \dfrac{3}{x^3} - 1$

16. $f(x) = 4a^5 - \dfrac{1}{2}x^2$

17. $p(x) = a\,x^5 - bx^c + d$

18. $s(x) = \left(x^2 + 4x\right)(x + 4)$

19. $f(x) = \left(x^4 - \dfrac{1}{2x^2}\right)\left(\dfrac{4}{x} - x\right)$

20. $f(x) = \dfrac{2x^2 - 7x - 15}{x - 5}$