



Exercise set (4.2):

Exercise set 4.2:

1, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16,
17, 18, 19, 20, 23, 24, 25, 26, 27,
29, 30, 33. p. 215

EXERCISE SET 4.2



1. In each part, confirm that the formula is correct, and state a corresponding integration formula.

(a) $\frac{d}{dx} [\sqrt{1+x^2}] = \frac{x}{\sqrt{1+x^2}}$

(b) $\frac{d}{dx} \left[\frac{1}{3} \sin(1+x^3) \right] = x^2 \cos(1+x^3)$

5–8 Find the derivative and state a corresponding integration formula. ■

5. $\frac{d}{dx}[\sqrt{x^3 + 5}]$

9–10 Evaluate the integral by rewriting the integrand appropriately, if required, and applying the power rule (Formula 2 in Table 4.2.1). ■

(a) $\int x^8 dx$

(b) $\int x^{5/7} dx$

(c) $\int x^3 \sqrt{x} dx$

10. (a) $\int \sqrt[3]{x^2} dx$

(b) $\int \frac{1}{x^6} dx$

(c) $\int x^{-7/8} dx$

$$12. \int [x^{-1/2} - 3x^{7/5} + \frac{1}{9}] dx$$

$$13. \int [x^{-3} - 3x^{1/4} + 8x^2] dx$$

19. $\int \frac{x^5 + 2x^2 - 1}{x^4} dx$

23. $\int \sec x(\sec x + \tan x) dx$

24. $\int \csc x(\sin x + \cot x) dx$

26. $\int \frac{dy}{\csc y}$

27. $\int \frac{\sin x}{\cos^2 x} dx$

29. $\int [1 + \sin^2 \theta \csc \theta] d\theta$

30. $\int \frac{\sec x + \cos x}{2 \cos x} dx$

