練習(5.5 - 6.1)：

EXERCISES 5.5 ■ PAGE 406

27. $\displaystyle\int \frac{z^2}{\sqrt[3]{1+z^3}}\,dz$

35. $\displaystyle\int \frac{\sin 2x}{1+\cos^2 x}\,dx$

39. $\displaystyle\int \sec^3 x \tan x\,dx$

65. $\displaystyle\int_1^2 x\sqrt{x-1}\,dx$

69. $\displaystyle\int_0^1 \frac{e^z+1}{e^z+z}\,dz$

Answers:

27. $\frac{1}{2}(1+z^3)^{2/3}+C$

35. $-\ln(1+\cos^2 x)+C$

39. $\frac{1}{3}\sec^3 x+C$

65. $\frac{16}{15}$

69. $\ln(e+1)$

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5–28 Sketch the region enclosed by the given curves. Decide whether to integrate with respect to x or y. Draw a typical approximating rectangle and label its height and width. Then find the area of the region.

11. $y = x^2, \quad y^2 = x$

15. $y = \tan x, \quad y = 2\sin x, \quad -\pi/3 \le x \le \pi/3$

19. $x = 2y^2, \quad x = 4 + y^2$

23. $y = \cos x, \quad y = \sin 2x, \quad x = 0, \quad x = \pi/2$

27. $y = 1/x, \quad y = x, \quad y = \frac{1}{4}x, \quad x > 0$

Answers:

11. $\frac{1}{3}$

15. $2 - 2\ln 2$

19. $\frac{32}{3}$

23. $\frac{1}{2}$

27. $\ln 2$