8장 연습문제

1.

(a) $\frac{1}{4}x^4 - \ln|x| + C$

(b) $\frac{1}{20}x^5 + \tan x + C$

(c) $\frac{1}{4}x^4 + \frac{2}{3}x^3 + \frac{3}{2}x^2 + 6x + C$

(d) $-\frac{2}{3x^3} + \frac{1}{2x^2} + \frac{1}{x} + C$

3.

(a) $5\sin\frac{1}{5}x + C$

(b) $-\frac{1}{\pi}\cos\pi x + C$

(c) $\frac{1}{\sqrt{3}}e^{\sqrt{3}x} + C$

(d) $\frac{1}{\pi\ln 3}3^{\pi x} + C$

5.

(a) $\frac{1}{2}e^x(\sin x - \cos x) + C$

(b) $-\frac{1}{5}e^{2x}\cos x + \frac{2}{5}e^{2x}\sin x + C$

(c) $\frac{1}{3}x^3\ln x - \frac{1}{9}x^3 + C$

(d) $x(\ln x)^2 - 2x\ln x + 2x + C$

7.

(a) $\frac{6}{5}$

(b) $\frac{1}{2} - \frac{\sqrt{3}}{2}$

(c) $-\cos 1 + \sin 1$

(d) $\frac{1}{9} - \frac{4}{9e^3}$

9.

(a) 발산한다.

(b) 발산한다.

(c) 1

(d) 발산한다.

11.

$$F(s) = \int_0^\infty e^{3t} e^{-st}\, dt = \lim_{p\to\infty} \int_0^p e^{-(s-3)t} dt = \lim_{p\to\infty} -\frac{1}{s-3} e^{-(s-3)t} \Big|_0^p = \frac{1}{s-3}$$