

## CHAPTER 07 적분의 응용

### SECTION 7.1 곡선 사이의 넓이

#### 유제 7-1

$$e^{\pi} - 3$$

#### 유제 7-2

$$\frac{2}{3}$$

#### 유제 7-3

$$\frac{5}{2}$$

### 7.1 연습문제

#### 01

$$\frac{9}{2}$$

#### 02

$$\frac{125}{6}$$

#### 03

$$\frac{7}{15}$$

#### 04

$$72$$

#### 05

$$e^2 - 3$$

#### 06

$$1 - \frac{\pi}{4}$$

#### 07

$$1$$

#### 08

$$e - 1$$

#### 09

$$4\ln 2 - 2$$

#### 10

$$\frac{125}{12}$$

#### 11

$$4$$

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12

$$\frac{32}{3}$$

13

$$\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{16}\pi$$

14

$$1 - \frac{\sqrt{3}}{2}$$

15

$$\frac{1}{2}e^2 - \frac{3}{2}$$

16

$$\frac{3}{2}\ln\left(\frac{3}{2}\right) - \frac{13}{24}$$

17

$$x \text{에 관한 적분} = y \text{에 관한 적분} = \frac{9}{2}$$

18

$$1 + \frac{2}{\pi}$$

19

$$\frac{1}{2}$$

20

$$k = \sqrt[3]{2}$$

## SECTION 7.2 부피

유제 7-4

$$\frac{\pi}{16}$$

유제 7-5

$$(a) \frac{\pi}{6} \quad (b) \frac{\pi}{6} \quad (c) \frac{7\pi}{15}$$

유제 7-6

$$\frac{324}{5}\pi$$

유제 7-7

$$\frac{5}{6}\pi$$

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### 7.2 연습문제

01

$$\frac{64000}{3}$$

02

$$\frac{9\sqrt{3}}{2}\pi$$

03

$$2\pi$$

04

$$\frac{243}{5}\pi$$

05

$$\frac{6\sqrt[3]{4}}{5}\pi$$

06

$$\frac{243}{5}\pi$$

07

$$\frac{2}{15}\pi$$

08

$$\frac{1}{6}\pi$$

09

$$2\pi^2$$

10

$$\frac{24\sqrt{3}}{5}\pi$$

11

$$\frac{64\sqrt{3}}{5}\pi$$

12

$$4\pi$$

13

$$10\sqrt{15}\pi$$

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### SECTION 7.3 곡선의 길이

#### 유제 7-8

$$\frac{14}{27}$$

#### 유제 7-9

$$\frac{20}{3}\sqrt{10} - \frac{2}{3}$$

#### 유제 7-10

$$8$$

#### 유제 7-11

$$\frac{1}{2}(e^x - e^{-x})$$

### 7.3 연습문제

#### 01

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

#### 02

$$\frac{2}{3}(37\sqrt{37} - 1)$$

#### 03

$$\frac{4}{3}$$

#### 04

$$\frac{59}{24}$$

#### 05

$$\frac{31}{6}$$

#### 06

$$\ln(\sqrt{2} + 1)$$

#### 07

$$\sqrt{2} + \ln(\sqrt{2} + 1)$$

#### 08

$$\frac{1}{27}(13\sqrt{13} - 1)$$

#### 09

$$e^3 - e^{-3}$$

#### 10

$$6$$

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11

$$2\sqrt{2}(\sqrt{2}-\sqrt{1-x})$$

12

4

13

$$-\frac{1}{2}+\ln\frac{3}{4}$$

14

$$\frac{\pi^2}{2}$$

15

$$\frac{8}{5}(4\sqrt{2}-1)$$

SECTION 7.4 회전면의 넓이

유제 7-12

$$8\pi$$

유제 7-13

$$\frac{13}{12}\pi$$

7.4 연습문제

01

$$\frac{13}{3}\pi$$

02

$$2\pi(\sqrt{2}+\ln(\sqrt{2}+1))$$

03

$$\frac{515}{64}\pi$$

04

$$2\pi$$

05

$$\frac{\pi}{27}(145\sqrt{145}-10\sqrt{10})$$

06

$$4\pi$$

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07

$$\frac{\pi}{27}(145\sqrt{145}-10\sqrt{10})$$

08

$$\frac{4\sqrt{2}}{3}\pi$$

09

$$\frac{4}{3}\pi$$

10

$$\frac{112\sqrt{3}}{45}\pi$$

11

$$4\pi^2$$

12

$$\sqrt{2}\pi$$

13

$$\frac{16\pi}{9}(16\sqrt{2}-1)$$