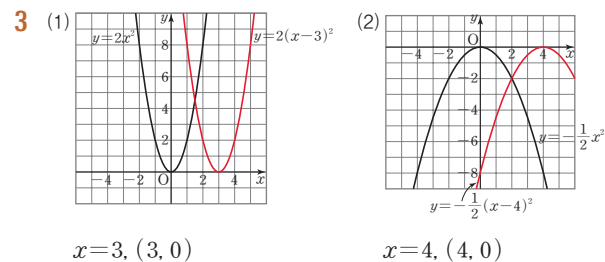


- 4 (1) $y=4x^2+3, x=0, (0, 3)$
 (2) $y=5x^2-4, x=0, (0, -4)$
 (3) $y=-6x^2+7, x=0, (0, 7)$
 (4) $y=-\frac{2}{3}x^2-2, x=0, (0, -2)$

- 5 (1) ① × ② ○ ③ × ④ ○ ⑤ ○
 (2) ① ○ ② × ③ ○ ④ × ⑤ ×

86~87쪽 1 (1) 1 (2) -4 (3) $\frac{2}{3}$ (4) $-\frac{1}{2}$

- 2 (1) 5 (2) -6 (3) $\frac{1}{4}$ (4) $-\frac{3}{5}$



- 4 (1) $y=7(x-5)^2, x=5, (5, 0)$
 (2) $y=9(x+3)^2, x=-3, (-3, 0)$
 (3) $y=-4(x-6)^2, x=6, (6, 0)$
 (4) $y=-\frac{1}{3}(x-\frac{3}{2})^2, x=\frac{3}{2}, (\frac{3}{2}, 0)$

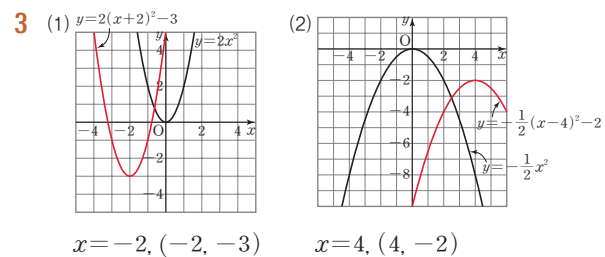
- 5 (1) ① ○ ② ○ ③ ○ ④ × ⑤ ×
 (2) ① × ② × ③ ○ ④ ○ ⑤ ×

88~89쪽 1 (1) x 축의 방향으로 1만큼, y 축의 방향으로 2만큼

(2) x 축의 방향으로 5만큼, y 축의 방향으로 -1만큼

(3) x 축의 방향으로 -2만큼, y 축의 방향으로 $\frac{1}{2}$ 만큼

- 2 (1) x 축의 방향으로 2만큼, y 축의 방향으로 7만큼
 (2) x 축의 방향으로 -1만큼, y 축의 방향으로 6만큼
 (3) x 축의 방향으로 $-\frac{2}{5}$ 만큼, y 축의 방향으로 -2만큼



- 4 (1) $y=(x-2)^2+4, x=2, (2, 4)$
 (2) $y=-6(x-5)^2-2, x=5, (5, -2)$
 (3) $y=\frac{2}{3}(x+4)^2-3, x=-4, (-4, -3)$
 (4) $y=-\frac{1}{5}(x+1)^2+\frac{1}{3}, x=-1, (-1, \frac{1}{3})$

- 5 (1) ① × ② ○ ③ ○ ④ ○ ⑤ ○
 (2) ① ○ ② × ③ ○ ④ × ⑤ ○

90~91쪽 1 (1) 1, 1, 1, 1, 1, 4 (2) $y=(x-4)^2-17$

(3) $y=-(x-3)^2+2$ (4) 4, 4, 4, 12, 2, 2

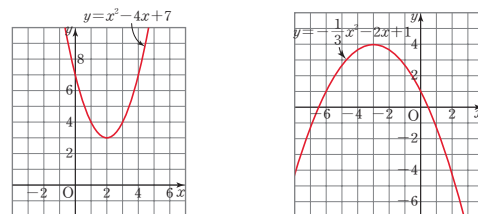
(5) $y=2(x+3)^2-9$ (6) $y=-4(x+2)^2+9$

- 2 (1) $y=2(x+1)^2-2$
 $x=-1, (-1, -2), (0, 0)$

- (2) $y=\frac{1}{4}(x-2)^2-3$
 $x=2, (2, -3), (0, -2)$

- (3) $y=-2(x+\frac{3}{2})^2-\frac{7}{2}$
 $x=-\frac{3}{2}, (-\frac{3}{2}, -\frac{7}{2}), (0, -8)$

- 3 (1) $y=(x-2)^2+3$ (2) $y=-\frac{1}{3}(x+3)^2+4$
 ① $x=2$ ② 2, 3 ① $x=-3$ ② -3, 4
 ③ 0, 7 ④ 아래 ③ 0, 1 ④ 위



- 4 (1) $y=(x+3)^2-4$ ① ○ ② ○ ③ ○ ④ ○ ⑤ ×
 (2) $y=-2(x+1)^2+1$ ① ○ ② × ③ ○ ④ ○ ⑤ ○

92쪽 1 (1) 2, 1, 1, 3, 2, $y=2(x-2)^2+1$

(2) $y=-3(x+1)^2+2$ (3) $y=2(x-1)^2-3$

(4) $y=-2(x+2)^2-5$

- 2 (1) $(-2, -1), (0, 3), y=(x+2)^2-1$
 (2) $(3, 4), (0, -5), y=-(x-3)^2+4$
 (3) $(1, 3), (4, 0), y=-\frac{1}{3}(x-1)^2+3$

93쪽

- 1 (1) $3, 4a+q, a+q, -1, -4, y=-(x+3)^2-4$
 (2) $y=(x-4)^2-12$ (3) $y=-(x+2)^2+3$

- 2 (1) $x=2, (0, -1), (1, 2), y=-(x-2)^2+3$
 (2) $x=3, (1, 2), (4, 5), y=-(x-3)^2+6$

- (3) $x=-3, (-2, -2), (0, 0), y=\frac{1}{4}(x+3)^2-\frac{9}{4}$

- 94쪽 1 (1) 7, 7, 7, 4, -6, $y=4x^2-6x+7$
 (2) $y=-x^2+2x+3$ (3) $y=3x^2-2x-4$

- 2 (1) $(0, -7), (2, 5), (7, 0), y=-x^2+8x-7$
 (2) $(-1, 0), (0, -3), (4, 5), y=x^2-2x-3$
 (3) $(-2, 2), (0, 2), (1, -4), y=-2x^2-4x+2$

95쪽 집중 연습

- 1 (1) $y=-2x^2+8x-6$ (2) $y=-x^2+2x+3$
 (3) $y=3x^2+6x+6$ (4) $y=-x^2+6x-5$
 (5) $y=x^2+4x-2$ (6) $y=3x^2+6x+3$
 (7) $y=-x^2-4x+5$

- 2 (1) $y=3x^2-6x+1$ (2) $y=-\frac{3}{4}x^2+3x$
 (3) $y=-x^2-4x-3$ (4) $y=2x^2+8x+2$
 (5) $y=-3x^2+2x+4$

96~97쪽 1 (1) $(-2, -3), -3$, 없다.

(2) $(3, -4)$, 없다., -4 (3) $(0, 5)$, 5, 없다.

- 2 (1) 3, -1, 없다. (2) -1, 0, 없다.

(3) $x=-2$ 일 때 최댓값은 5이고, 최솟값은 없다.

(4) $x=\frac{1}{4}$ 일 때 최솟값은 2이고, 최댓값은 없다.

- 3 (1) 1, 3, $x=1$ 일 때 최솟값은 3이고, 최댓값은 없다.

(2) $x=\frac{3}{2}$ 일 때 최솟값은 $-\frac{27}{4}$ 이고, 최댓값은 없다.

(3) $x=2$ 일 때 최댓값은 35이고, 최솟값은 없다.

(4) $x=3$ 일 때 최솟값은 -3이고, 최댓값은 없다.

(5) $x=-\frac{1}{2}$ 일 때 최댓값은 1이고, 최솟값은 없다.

(6) $x=2$ 일 때 최댓값은 6이고, 최솟값은 없다.

- 4 (1) $\frac{13}{2}$ (2) 4 (3) 3 (4) 4

98~99쪽 1 (1) $y=x^2+20x$ (2) -100 (3) -10과 10

2 -64, -8과 8

3 (1) $y=-x^2+2x+80$ (2) 81 cm^2 (3) 9 cm

4 $50\text{ cm}^2, 10\text{ cm}$

5 (1) $y=-5(x-6)^2+180$ (2) 6초, 180 m

6 2초, 30 m

7 (1) $y=-2x^2+200x+40000$ (2) 45000원 (3) 150원

8 312500원, 1250원

100~102쪽 대단원 개념 마무리

- 1 (1) × (2) ○ (3) × (4) ×

- 2 (1) $y=4x$, × (2) $y=\frac{1}{2}x^2+x$, ○
 (3) $y=100x$, × (4) $y=3\pi x^2$, ○

- 3 (1) 1 (2) $\frac{139}{4}$ 4 (1) 6 (2) -1

- 5 (1) × (2) ○ (3) × (4) ○

- 6 (1) ㄱ, ㄷ (2) ㄷ (3) ㄱ, ㄷ

- 7 (1) $-\frac{1}{2}$ (2) $\frac{3}{5}$

- 8 (1) × (2) ○ (3) × (4) ○

- 9 (1) × (2) × (3) ○ (4) ○

- 10 (1) ㄴ (2) ㄴ (3) ㄷ (4) ㄱ, ㄷ

- 11 (1) × (2) ○ (3) ○ (4) ○ 12 $y=\frac{3}{4}(x+2)^2-3$

- 13 $y=3(x-2)^2-1$ 14 $y=-3x^2-8x+3$

- 15 (1) $x=1$ 일 때 최솟값은 -4이고, 최댓값은 없다.

(2) $x=4$ 일 때 최댓값은 -6이고, 최솟값은 없다.

(3) $x=-2$ 일 때 최댓값은 0이고, 최솟값은 없다.

(4) $x=4$ 일 때 최솟값은 -3이고, 최댓값은 없다.

- 16 (1) 5 (2) -40 (3) 3 17 15 cm

익힘북

2~15쪽 I. 실수와 그 계산

- 1 (1) 9, 3, -3 (2) 64, 8, -8 (3) $\frac{1}{25}, \frac{1}{5}, -\frac{1}{5}$

(4) 0.49, 0.7, -0.7

- 2 (1) 0 (2) 9, -9 (3) 12, -12 (4) $\frac{6}{13}, -\frac{6}{13}$ (5) 1.5, -1.5

- 3 (1) $\sqrt{5}$ (2) $-\sqrt{13}$ (3) $\pm\sqrt{\frac{1}{10}}$ (4) $\sqrt{0.2}$

- 4 (1) 3 (2) -6 (3) $\frac{1}{7}$ (4) -0.8

- 5 (1) 2 (2) 7 (3) $-\frac{1}{3}$ (4) -1.21 (5) 5 (6) -13 (7) 0.09

(8) $-\frac{1}{4}$

- 6 (1) 8 (2) 3 (3) 3 (4) -90 (5) 12 (6) 2 (7) 10 (8) -10

- 7 (1) 0 (2) 11 (3) 10 (4) 15 (5) 6 (6) -3

- 8 (1) $2a$ (2) $-3a$ (3) $5a$ (4) $-7a$ (5) $-10a$ (6) $\frac{1}{3}a$

(7) $-\frac{2}{5}a$ (8) $0.4a$

- 9 (1) $4a$ (2) a (3) $-15a$ (4) $-18a$ (5) $\frac{1}{3}a$ (6) $-0.4a$

- 10 (1) < (2) > (3) > (4) < (5) > (6) > (7) > (8) <

- 11 (1) $2, \sqrt{5}, \sqrt{6}$ (2) $\sqrt{15}, 4, \sqrt{17}$ (3) $0.5, \sqrt{0.4}, \sqrt{0.5}$

(4) $-\sqrt{10}, -3, \sqrt{8}$ (5) $-\sqrt{3}, -\sqrt{\frac{2}{3}}, -\frac{2}{3}$

- 12 (1) 유 (2) 무 (3) 무 (4) 유 (5) 유 (6) 무 (7) 유 (8) 무

- 13 (1) ○ (2) × (3) × (4) ○ (5) × (6) × (7) ○

- 14 (1) P: $1-\sqrt{2}, Q: 1+\sqrt{2}$ (2) P: $-1-\sqrt{5}, Q: -1+\sqrt{5}$
 (3) P: $2-\sqrt{10}, Q: 2+\sqrt{10}$ (4) P: $-3-\sqrt{8}, Q: -3+\sqrt{8}$

- 15 (1) $-2+\sqrt{8}$ (2) $1+\sqrt{12}$ (3) $3-\sqrt{15}$ (4) $-4-\sqrt{17}$

- 16 (1) ○ (2) ○ (3) ○ (4) × (5) ○ (6) ○ (7) ×

- 17 (1) > (2) < (3) < (4) > (5) > (6) > (7) > (8) <

- 18 (1) 2.782 (2) 2.816 (3) 2.828 (4) 2.832 (5) 2.848

- 19 (1) 9.83 (2) 9.91 (3) 10.4 (4) 11 (5) 12.2

- 20 (1) $\sqrt{33}$ (2) $\sqrt{6}$ (3) $6\sqrt{26}$ (4) $-12\sqrt{2}$ (5) $\sqrt{105}$ (6) $\sqrt{55}$
 (7) $14\sqrt{5}$ (8) $-10\sqrt{6}$

- 21 (1) $\sqrt{7}$ (2) $4\sqrt{7}$ (3) $-5\sqrt{6}$ (4) $2\sqrt{14}$ (5) $-4\sqrt{6}$ (6) $\sqrt{2}$
 (7) $3\sqrt{30}$ (8) $-3\sqrt{35}$

- 22 (1) $2\sqrt{6}$ (2) $5\sqrt{2}$ (3) $-4\sqrt{3}$ (4) $-3\sqrt{13}$ (5) $\frac{\sqrt{5}}{4}$

(6) $-\frac{\sqrt{3}}{8}$ (7) $\frac{\sqrt{5}}{10}$ (8) $-\frac{\sqrt{38}}{10}$

- 23 (1) $\sqrt{27}$ (2) $\sqrt{72}$ (3) $-\sqrt{44}$ (4) $-\sqrt{96}$ (5) $\sqrt{\frac{5}{4}}$

(6) $\sqrt{\frac{14}{25}}$ (7) $-\sqrt{\frac{35}{36}}$ (8) $-\sqrt{\frac{17}{49}}$

- 24 (1) 22.36 (2) 223.6 (3) 707.1 (4) 0.2236 (5) 0.07071

25 (1) 55.68 (2) 556.8 (3) 0.5568 (4) 0.1761 (5) 0.01761

26 (1) $\frac{\sqrt{6}}{6}$ (2) $5\sqrt{3}$ (3) $\frac{\sqrt{35}}{7}$ (4) $\frac{\sqrt{2}}{3}$ (5) $\frac{\sqrt{15}}{10}$ (6) $\frac{\sqrt{14}}{5}$
(7) $-\frac{2\sqrt{5}}{3}$ (8) $\frac{\sqrt{30}}{2}$

27 (1) $5\sqrt{3}$ (2) $8\sqrt{7}$ (3) $-4\sqrt{6}$ (4) $\sqrt{10}$ (5) $-\sqrt{11}$ (6) $\sqrt{5}$
(7) $16\sqrt{2}-6\sqrt{6}$ (8) $\frac{8}{5}\sqrt{3}-\sqrt{13}$

28 (1) $9\sqrt{2}$ (2) $-\sqrt{6}$ (3) $5\sqrt{3}$ (4) $11\sqrt{2}$ (5) $\frac{8\sqrt{6}}{9}$ (6) $7\sqrt{5}$
(7) $5\sqrt{7}-9\sqrt{2}$ (8) $-\sqrt{3}-4\sqrt{6}$

29 (1) $\sqrt{14}+\sqrt{21}$ (2) $-2\sqrt{30}+4\sqrt{3}$ (3) $6-2\sqrt{5}$
(4) $-4\sqrt{15}-10\sqrt{3}$ (5) $\sqrt{11}+4$ (6) $-7+2\sqrt{7}$

30 (1) $\frac{\sqrt{6}+\sqrt{15}}{3}$ (2) $\frac{5\sqrt{2}-\sqrt{14}}{2}$ (3) $\frac{2\sqrt{10}+\sqrt{30}}{5}$
(4) $\sqrt{42}-\sqrt{2}$ (5) $\frac{\sqrt{15}+\sqrt{2}}{3}$ (6) $\frac{4-\sqrt{21}}{5}$

31 (1) $4\sqrt{7}$ (2) $17\sqrt{3}$ (3) $6\sqrt{2}$ (4) $\sqrt{7}+12\sqrt{6}$ (5) $-4\sqrt{2}$
(6) $-\sqrt{10}+3\sqrt{6}$ (7) $3\sqrt{14}-13\sqrt{3}$ (8) $\frac{5\sqrt{3}}{3}-\frac{\sqrt{6}}{6}$
(9) $3-\frac{9\sqrt{5}}{2}$ (10) $12+3\sqrt{2}$

16~29쪽 II. 인수분해와 이차방정식

1 (1) $ax+bx+ay+by$ (2) $2ax-bx+4ay-2by$
(3) $6ab+3a-4b-2$ (4) $-2xy-6x+4y+12$
(5) $-6a^2-ab+b^2$ (6) $-4x^2-13xy-3y^2$

2 (1) 9 (2) 11 (3) 2 (4) -7

3 (1) x^2+6x+9 (2) $a^2-8a+16$
(3) $4x^2+12x+9$ (4) $1-6a+9a^2$
(5) $9x^2+24xy+16y^2$ (6) $4a^2-20ab+25b^2$
(7) $16x^2-48xy+36y^2$ (8) $4a^2+2ab+\frac{1}{4}b^2$

4 (1) x^2-4 (2) $a^2-\frac{1}{4}$ (3) $16-x^2$ (4) $81-y^2$ (5) $9x^2-4y^2$
(6) $4x^2-25y^2$ (7) $9a^2-49b^2$ (8) $36b^2-25a^2$

5 (1) $x^2+9x+14$ (2) $a^2+3a-18$ (3) $x^2+5x-36$
(4) $a^2-\frac{5}{6}a+\frac{1}{6}$ (5) $x^2+8xy+15y^2$ (6) $x^2-4xy-12y^2$
(7) $a^2+\frac{5}{2}ab-6b^2$ (8) $a^2-7ab+12b^2$

6 (1) $8x^2+14x+3$ (2) $6a^2+11a-10$
(3) $-12x^2-7x+10$ (4) $20a^2-43a+14$
(5) $10x^2+17xy+3y^2$ (6) $15x^2-xy-6y^2$
(7) $-9a^2+6ab+8b^2$ (8) $12x^2+\frac{3}{2}xy-\frac{1}{12}y^2$

7 (1) $\neg$, 10816 (2) $\perp$, 9604 (3) $\neg$, 5329 (4) $\perp$, 34,81
(5) $\subset$, 9999 (6) $\supset$, 1722 (7) $\subset$, 15,96 (8) $\supset$, 410,06

8 (1) $4+2\sqrt{3}$ (2) $11-2\sqrt{30}$ (3) -2 (4) $23-9\sqrt{3}$
(5) $11-\sqrt{7}$ (6) $-2-5\sqrt{15}$

9 (1) $-3+\sqrt{10}$ (2) $16\sqrt{3}+12\sqrt{5}$ (3) $-5-\sqrt{35}$
(4) $2\sqrt{2}+\sqrt{7}$ (5) $-9+5\sqrt{3}$ (6) $23+4\sqrt{33}$

10 (1) a^2b-ab^2 (2) x^2+6x+9 (3) a^2-25 (4) x^2+2x-8
(5) $15x^2-4x-3$ (6) $8x^2-26xy-7y^2$

11 (1) 2, 2a, $a(a-1)$ (2) $x, y, x-y, y(x-y), (x-y)^2$
(3) $x-1, x+1, x^2+1, (x-1)(x+1)$

12 (1) $2x(y-4)$ (2) $xy(x+y)$ (3) $4a^2b(a-3)$
(4) $3a(1+2x-x^2)$ (5) $xyz(z+y+x)$ (6) $(x+y)(a-b)$
(7) $(y-1)(x-1)$ (8) $(a-2)(6a+1)$
(9) $(a+2)(2x-1)$ (10) $(x+2y)(x+2y-4)$

13 (1) $(x+4)^2$ (2) $(x-11)^2$ (3) $\left(x-\frac{1}{4}\right)^2$ (4) $\left(x-\frac{2}{3}\right)^2$
(5) $(3x+5)^2$ (6) $(5x-4)^2$ (7) $2(x-3)^2$ (8) $3(5x-1)^2$

14 (1) $(x+2y)^2$ (2) $(x-6y)^2$ (3) $(4x+y)^2$ (4) $(3x-y)^2$
(5) $(2x-3y)^2$ (6) $\left(\frac{1}{8}x+\frac{1}{3}y\right)^2$ (7) $3(x+3y)^2$
(8) $4(5x-2y)^2$

15 (1) 64 (2) 81 (3) $\frac{9}{4}$ (4) ± 10 (5) ± 20
(6) $\pm \frac{2}{7}$ (7) 9 (8) 49 (9) $\pm \frac{1}{6}$ (10) ± 24

16 (1) $(x+3)(x-3)$ (2) $(x+5)(x-5)$
(3) $(8x+1)(8x-1)$ (4) $(7x+4)(7x-4)$
(5) $(5x+12y)(5x-12y)$ (6) $(10x+y)(10x-y)$
(7) $\left(\frac{1}{2}x+6\right)\left(\frac{1}{2}x-6\right)$ (8) $\left(\frac{2}{3}x+\frac{3}{5}y\right)\left(\frac{2}{3}x-\frac{3}{5}y\right)$
(9) $3(8+x)(8-x)$ (10) $5(2x+3y)(2x-3y)$

17 (1) $(x+2)(x+5)$ (2) $(x+2)(x+13)$
(3) $(x-3)(x+8)$ (4) $(x-5)(x-4)$
(5) $(x+3)(x-4)$ (6) $(x-9)(x+2)$
(7) $(x-4y)(x-3y)$ (8) $(x-3y)(x+5y)$
(9) $(x+2y)(x+12y)$ (10) $(x+5y)(x-9y)$

18 (1) $(x+2)(3x+4)$ (2) $(x+1)(4x-1)$
(3) $(2x-1)(3x+2)$ (4) $(x-1)(5x-3)$
(5) $(x-1)(7x+4)$ (6) $(3x+1)(3x-5)$
(7) $(2x+3y)(3x+2y)$ (8) $(x-3y)(2x-y)$
(9) $(x+3y)(4x-3y)$ (10) $(3x+2y)(5x-7y)$

19 (1) 1700 (2) 12500 (3) 4000 (4) 720
(5) 40000 (6) 6400 (7) 36 (8) 10000

20 (1) $\times$ (2) $\bigcirc$ (3) $\bigcirc$ (4) $\times$ (5) $\times$ (6) $\bigcirc$

21 (1) $a \neq 1$ (2) $a \neq 2$ (3) $a \neq 1$

22 (1) $\times$ (2) $\times$ (3) $\bigcirc$ (4) $\bigcirc$ **23** (1) 4 (2) 7 (3) 2 (4) 3

24 (1) $x=0$ 또는 $x=\frac{3}{2}$ (2) $x=0$ 또는 $x=-6$
(3) $x=0$ 또는 $x=-\frac{10}{3}$ (4) $x=0$ 또는 $x=\frac{1}{4}$

25 (1) $x=-\frac{5}{4}$ 또는 $x=\frac{5}{4}$ (2) $x=-3$ 또는 $x=3$
(3) $x=-\frac{1}{7}$ 또는 $x=\frac{1}{7}$ (4) $x=-4$ 또는 $x=4$

26 (1) $x=3$ 또는 $x=5$ (2) $x=-7$ 또는 $x=-8$
(3) $x=-2$ 또는 $x=8$ (4) $x=-11$ 또는 $x=4$

(5) $x=-1$ 또는 $x=-\frac{4}{5}$ (6) $x=-\frac{3}{2}$ 또는 $x=\frac{1}{3}$
(7) $x=-3$ 또는 $x=\frac{1}{4}$ (8) $x=-\frac{1}{2}$ 또는 $x=4$

27 (1) $x=-2$ 또는 $x=-1$ (2) $x=0$ 또는 $x=10$
(3) $x=-1$ 또는 $x=2$

28 (1) $x=\frac{3}{2}$ (2) $x=-9$ (3) $x=-\frac{4}{3}$ (4) $x=\frac{2}{5}$
(5) $x=\frac{1}{3}$ (6) $x=\frac{3}{4}$ (7) $x=-4$

29 (1) 49 (2) 25 (3) $\frac{4}{25}$

30 (1) $x=\pm 2\sqrt{6}$ (2) $x=\pm \frac{9}{2}$ (3) $x=\pm \frac{5}{4}$
(4) $x=9$ 또는 $x=-5$ (5) $x=-4\pm\sqrt{2}$ (6) $x=\frac{1\pm\sqrt{2}}{3}$
(7) $x=2$ 또는 $x=-8$ (8) $x=1\pm\sqrt{5}$

31 (1) $x=-2\pm\sqrt{10}$ (2) $x=1\pm\sqrt{2}$ (3) $x=\frac{-3\pm\sqrt{33}}{2}$

(4) $x=2\pm\frac{\sqrt{6}}{2}$ (5) $x=3\pm\sqrt{6}$ (6) $x=1\pm\sqrt{15}$
(7) $x=4\pm\frac{\sqrt{59}}{2}$ (8) $x=\frac{1\pm\sqrt{5}}{4}$

32 (1) $x=\frac{1\pm 3\sqrt{5}}{2}$ (2) $x=\frac{3\pm\sqrt{7}}{2}$ (3) $x=\frac{-7\pm\sqrt{13}}{6}$
(4) $x=\frac{-4\pm\sqrt{26}}{5}$ (5) $x=\frac{2\pm\sqrt{10}}{2}$ (6) $x=\frac{5\pm\sqrt{65}}{10}$

33 (1) $x=\frac{-4\pm\sqrt{70}}{6}$ (2) $x=\frac{5\pm\sqrt{5}}{6}$
(3) $x=1$ 또는 $x=-\frac{10}{3}$ (4) $x=\frac{-5\pm\sqrt{19}}{2}$
(5) $x=-3$ 또는 $x=1$ (6) $x=\frac{-2\pm 2\sqrt{6}}{5}$

34 15 **35** 9, 11 **36** 13살

37 8권 **38** (1) 2초 후 (2) 6초 **39** 3

30~38쪽 III. 이차함수

1 (1) $\times$ (2) $\bigcirc$ (3) $\times$ (4) $\times$

2 (1) $y=2x^2+2x$, $\bigcirc$ (2) $y=6\pi x$, $\times$ (3) $y=5\pi x^2$, $\bigcirc$
(4) $y=80x+80$, $\times$

3 (1) 27 (2) -2 (3) -3 (4) -10 (5) 6 (6) -24

4 (1) 아래 (2) y (3) 증가 (4) 감소

5 (1) 위 (2) y (3) 감소 (4) 증가

6 (1) $\perp$, $\subset$, $\supset$, $\varnothing$ (2) $\subset$ (3) $\varnothing$ (4) $\perp$ 과 $\varnothing$
(5) $\perp$, $\subset$, $\supset$, $\varnothing$ (6) $\neg$, $\varnothing$

7 (1) $y=-7x^2-3$, $x=0$, (0, -3)
(2) $y=6x^2+6$, $x=0$, (0, 6)
(3) $y=\frac{1}{5}x^2-1$, $x=0$, (0, -1)
(4) $y=-\frac{1}{4}x^2+\frac{1}{2}$, $x=0$, $\left(0, \frac{1}{2}\right)$

8 (1) $y=5(x+4)^2$, $x=-4$, (-4, 0)

(2) $y=-3(x-5)^2$, $x=5$, (5, 0)

(3) $y=\frac{1}{2}(x-2)^2$, $x=2$, (2, 0)

(4) $y=-\frac{2}{3}\left(x+\frac{3}{2}\right)^2$, $x=-\frac{3}{2}$, $\left(-\frac{3}{2}, 0\right)$

9 (1) $y=2(x-3)^2+4$, $x=3$, (3, 4)
(2) $y=-(x-5)^2-2$, $x=5$, (5, -2)

(3) $y=-\frac{5}{2}(x+6)^2+1$, $x=-6$, (-6, 1)

(4) $y=\frac{5}{6}(x+3)^2-9$, $x=-3$, (-3, -9)

10 (1) $y=-(x-4)^2+31$, $x=4$, (4, 31), (0, 15)
(2) $y=3(x+1)^2-4$, $x=-1$, (-1, -4), (0, -1)

(3) $y=\frac{1}{2}(x-2)^2-9$, $x=2$, (2, -9), (0, -7)

(4) $y=-\frac{1}{5}\left(x-\frac{5}{2}\right)^2+2$, $x=\frac{5}{2}$, $\left(\frac{5}{2}, 2\right)$, $\left(0, \frac{3}{4}\right)$

11 (1) $y=-2(x-2)^2-5$ (2) $y=5(x+3)^2+6$
(3) $y=-3(x-1)^2$ (4) $y=\frac{1}{3}(x+3)^2-5$
(5) $y=-2(x-2)^2+6$

12 (1) $y=\frac{3}{2}(x-2)^2-4$ (2) $y=-\frac{1}{2}(x+4)^2+1$
(3) $y=\frac{1}{3}(x+3)^2+1$ (4) $y=-\frac{1}{2}(x-4)^2+9$

13 (1) $y=-(x-1)^2-3$ (2) $y=\frac{1}{2}(x-3)^2-5$
(3) $y=-\frac{1}{3}(x+2)^2+4$ (4) $y=2(x+5)^2-9$
(5) $y=-3x^2+6$

14 (1) $y=-\frac{1}{2}(x-2)^2+8$ (2) $y=\frac{1}{3}(x+1)^2-\frac{7}{3}$
(3) $y=-(x+2)^2+16$ (4) $y=2(x-1)^2-3$

15 (1) $y=x^2+6x+7$ (2) $y=-\frac{1}{2}x^2+3$
(3) $y=-2x^2-8x+10$ (4) $y=2x^2-6x+3$
(5) $y=-x^2+x+6$

16 (1) $y=-x^2+3x+2$ (2) $y=x^2+2x-2$
(3) $y=2x^2-10x+8$ (4) $y=-x^2+2x+3$

17 (1) (0, 10), 없다, 10 (2) (-2, 0), 0, 없다.
(3) $\left(-\frac{1}{2}, 5\right)$, 없다, 5 (4) (3, 2), 2, 없다.

18 (1) $x=-3$ 일 때 최솟값은 -2이고, 최댓값은 없다.
(2) $x=-4$ 일 때 최댓값은 28이고, 최솟값은 없다.
(3) $x=-2$ 일 때 최솟값은 -3이고, 최댓값은 없다.
(4) $x=-\frac{3}{2}$ 일 때 최댓값은 5이고, 최솟값은 없다.

19 (1) 13 (2) -5 (3) -2 (4) 2

20 -144, -12와 12

21 98 m²

22 4초, 80 m

23 360000원, 1200원