Answers

Chap. 1

(1 - 6)

(1) $x = 1,\ y = 1$

(2) $x = 2,\ y = 1$

(3) $x = 1/2,\ y = 1/2$

(4) $x = 3,\ y = 2$

(5) $x = 3,\ y = 2$

(6) $x = 0,\ y = 2$

(7) $x = 2,\ y = 2,\ z = 1$

(8) $x = 1,\ y = 2,\ z = -1$

(9) $x = 3,\ y = 2,\ z = 1$

(10) $x = 1/4,\ y = 1/3,\ z = 1/2$

(11) $x = 2/3,\ y = 1/2,\ z = 3/5$

(12) $x = 1,\ \ y = 0,\ \ z = -1$

Chap. 2

(2 - 2)

(1) $5x + 2y = 10$

(2) $x + 2y = 6$

(3) $x + 2y = 9$

(4) $x + 5y = 34$

(5) $x - 5y = -27$

(6) $y = 2$

(1 b) $x + y / (4/5) = 1$

(2 b) $x / 3 + y / (9/2) = 1$

(3 b) $x / (7/2) + y / 7 = 1$

Chap. 2

(2 - 2)

(4 b) $x / (1/3) + y / (2/3) = 1$

(5 b) $-x / (8/7) + y / 2 = 1$

(6 b) $-x / 4 + y / (1/2) = 1$

(7 b) $x / 10 + y / 15 = 1$

(8 b) $-x / 9 + y / (3/2) = 1$

(2 - 4)

(1) $p = 1$

(2) $p = 3$

(3) $p = 4$

(4) $p = 8 / \sqrt{5}$

(5) $p = 5 / \sqrt{13}$

(6) $p = 2 / \sqrt{113}$

(7) $p = 3$

(8) $p = 5$

(9) $p = 2$

(10) $p = 3$

(1 b) $d = 0$

(2 b) $d = 7.4$

(3 b) $d = 28 / \sqrt{29}$

(4 b) $d = 15 / \sqrt{26}$

(5 b) $d = 13 / \sqrt{68}$

(6 b) $d = 0$

(7 b) $d = 14 / \sqrt{5}$

(8 b) $d = 4 / \sqrt{61}$

(9 b) $d = 44 / \sqrt{45}$

(10 b) $d = 9 / \sqrt{20}$

(1 c) near

(2 c) near

(3 c) far

(4 c) neither

(2 - 6)

(1) $24x + 28y = -89$

(2) $4x - 32y = 1$

(3) $2x - 6y = -15$

(4) $19x - 399y = 100$

(5) $4x - 12y = 9$

(6) $11x + 2y = 2$

(7) $506x - 300y = 159$

(8) $54x + 16y = 45$

(9) $7x + y = 8$

(10) $3,x - y = 8$

(2 - 7)

(1) $-1/2,\ 5/4$

(2) $3/5,\ -8/5$

(2 - 8)

(1) $x - y = 2, \quad x + y = 6$

(2) $x + 3y = 11$

(3) $4x + 3y = 17$

(4) $2x + y = 5, \quad x - 2y = 0$

(5) $x - 2y = -1, \quad 11x + 2y = 37$

(6) $-x + 18y = 52, \quad 17x + 6y = 52$

(7) $(\sqrt{7} - 1)x + (\sqrt{7} - 1)y = 7\sqrt{7} - 1$

$(\sqrt{2} - 1)x + (\sqrt{7} + 1)y = 2\sqrt{7} + 1$

(8) $3x - 4y = 2, \quad x = 2$

(9) $x = 7 / 4$

(10) $1 / 3, \quad -3$

(11) 45^0

Chap. 3

(3 - 1)

(1) $(x - 2)^2 + (y - 1)^2 = 9$

(2) $(x - 3)^2 + (y + 2)^2 = 36$

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

(4) $(x - 7)^2 + (y - 8)^2 = 25$

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

(6) $(h, k) = (1, 2), \quad r = 4$

(7) $(h, k) = (2, 3), \quad r = 5$

(8) $(h, k) = (1, 1), \quad r = 3$

(3 - 2)

(1) $(x+3)^2+(y+1)^2=9$

(2) $(x-1)^2+(y-2)^2=16$

(3) $(x-3)^2+(y+1)^2=25$

(4) $(x-2)^2+(y-0)^2=16$

(5) $(x-3)^2+(y-3)^2=25$

(3 - 3)

(1), yes, (2), no, (3), yes

(3 - 4)

(1) $-x+2y=4$

(2) $(x-2)^2+(y-0)^2=13$

(3 - 9)

(1) $3x+4y=\pm 15$

(2) $2x+y=\pm 2\sqrt{5}$

(3) $-4x+3y=5,\quad x=1$

(4) $4x-3y=6,\quad y=6$

(5) $\overset{\frown}{\cos}\ 3/5$

(6) $\overset{\frown}{\cos}\ 1$

(3 - 10)

(1) (- 1, - 1), (2, - 2)

(2) (- 1, 3), (0, 2)

(3) $(-2-\sqrt{14}/2,\ 5+\sqrt{14}/2)$,
$(-2+\sqrt{14}/2,\ 5-\sqrt{14}/2)$

(4) $(-1, 3)$, $(1, 1)$

(5) $(5, 3)$, $(4, 2)$

(6) $(-4, 1)$, $(3, 0)$

(3 - 11)

(1) $2\sqrt{5}$, $x + 2y = -2$

(2) $2\sqrt{2}$, $x + y = -1$

(3) $\sqrt{2}$, $x - y = -4$

(4) $12/\sqrt{5}$, $2x - y = 7$

(3 - 12)

(1) $(1/3, 1/3)$

(2) $(-4, 0)$

(3) $(1, -2)$

(4) $(3, -2)$ *

Chap. 4

(4 - 2)

	a	b	e
(1)	3	2	$\sqrt{5}/3$
(2)	2	1	$\sqrt{3}/2$
(3)	$\sqrt{3}$	$\sqrt{2}$	$\sqrt{3}/3$
(4)	6	3	$\sqrt{3}/2$
(5)	3	3	0

(6) $x^2/36 + y^2/27 = 1$

(7) $x^2/27 + y^2/36 = 1$

(4 - 3)

	(U_1, U_2)	a	b	e	2k
(A)	(1, - 1)	2	1	$\sqrt{3}/2$	1
(B)	(2, - 2)	3	1	$\sqrt{8}/3$	2 / 3
(C)	(2, - 3)	5	4	3 / 5	32 / 5

(4 - 5)

	(U_1, U_2)	a	b	e	k
(1)	(- 2, 1)	$2\sqrt{2}$	2	$\sqrt{3/2}$	$\sqrt{2}$
(2)	(2, 3)	$\sqrt{6}$	2	$\sqrt{5}/3$	$4/\sqrt{6}$
(3)	(- 2, - 1)	$\sqrt{2}$	$\sqrt{2}$	$\sqrt{2}$	$\sqrt{2}$

(4 - 6)

	Vertex	Focus	Semi-perfolatum
	(h, k)	(S_1, S_2)	k
(1)	(2, 1)	(11/4, 1)	3 / 2
(2)	(2, - 4)	(2, - 7/2)	1

(4 - 8)

(1)	$(3 + \sqrt{5})x^2 + (3 - \sqrt{5})y^2 = 6$	elipse
(2)	$(1 + 2\sqrt{5})x^2 + (1 - 2\sqrt{5})y^2 = -78/19$	hyperb.
((3)	$x^2 = -(\sqrt{2}/2)y$	parabola
(4)	$(3 + \sqrt{10})x^2 + (3 - \sqrt{10})y^2 = 16$	hyperbola
(5)	$y^2 = -(\sqrt{2}/2)x$	parabola
(6)	$(3 + \sqrt{2})x^2 + (3 - \sqrt{2})y^2 = 30/7$	elipse
(7)	$x^2 - y^2 = 4$	hyperbola