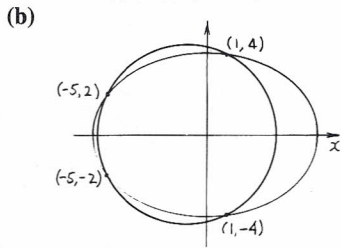
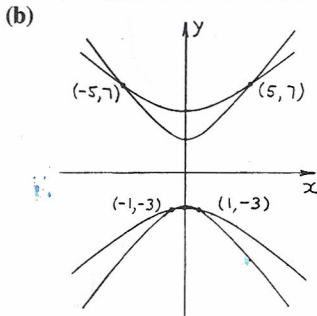


Exercise 12-4

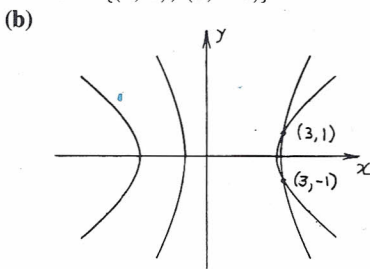
7. (a) $x^2 + 2y^2 = 33$
 $x^2 + y^2 + 2x = 19$
 $x^2 + 4x = 5$
 $x^2 + 4x - 5 = 0$
 $x = 1, -5$
 $y = \pm 4, \pm 2$
 $S = \{(1, 4), (1, -4), (-5, 2), (-5, -2)\}$



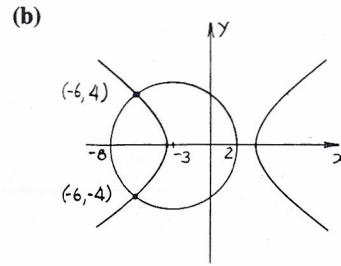
8. (a) $5x^2 - 3y^2 = -22$
 $5x^2 - 6y^2 + 12y = -85$
 $3y^2 - 12y = 63$
 $y^2 - 4y - 21 = 0$
 $y = 7, -3$
 $x = \pm 5, \pm 1$
 $S = \{(5, 7), (-5, 7), (1, -3), (-1, -3)\}$



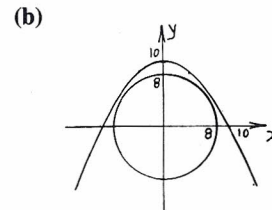
9. (a) $3x^2 - 5y^2 = 22$
 $3x^2 - y^2 - 6x = 8$
 $12x^2 - 30x = 18$
 $2x^2 - 5x - 3 = 0$
 $x = 3, -1/2$
 $y = \pm 1, \text{ no real number}$
 $S = \{(3, 1), (3, -1)\}$



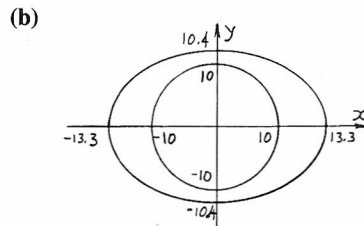
10. (a) $x^2 + y^2 + 6x = 16$
 $2x^2 - 3y^2 = 24$
 $5x^2 + 18x = 72$
 $5x^2 + 18x - 72 = 0$
 $x = -6, 12/5$
 $y = \pm 4, \text{ no real number}$
 $S = \{(-6, 4), (-6, -4)\}$



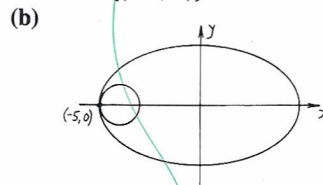
11. (a) $x^2 + y^2 = 64$
 $x^2 + 10y = 100$
 $y^2 - 10y = -36$
 $y = \text{no real number}$
 $S = \emptyset$



12. (a) $x^2 + y^2 = 100$
 $8x^2 + 13y^2 = 1405$
 $5y^2 = 605$
 $y = 11, -11$
 $x = \text{no real number}$
 $S = \emptyset$



13. (a) $x^2 + y^2 + 8x = -15$
 $9x^2 + 25y^2 = 225$
 $16x^2 + 200x = -600$
 $2x^2 + 25x + 75 = 0$
 $x = -5, -7.5$
 $y = 0, \text{ no real number}$
 $S = \{(-5, 0)\}$



14. (a) $x^2 - 6y = 34$
 $x^2 + y^2 = 25$
 $y^2 + 6y = -9$
 $y^2 + 6y + 9 = 0$
 $y = -3$
 $x = \pm 4$
 $S = \{(4, -3), (-4, -3)\}$