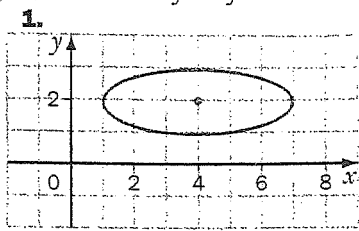


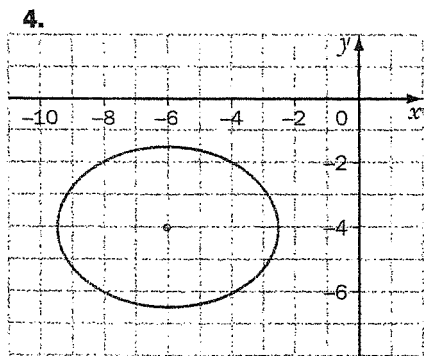
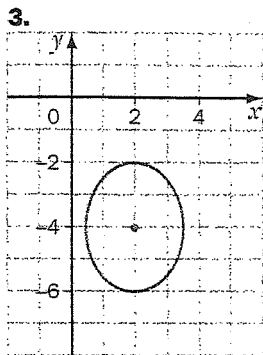
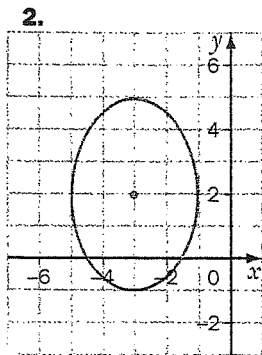
Practice (Pg. 150)

For each ellipse, determine the

- a) coordinates of the centre
- b) lengths of the major and minor axes
- c) coordinates of the foci



#1-8
11-16
21, 22



5. $\frac{x^2}{64} + \frac{y^2}{36} = 1$

6. $\frac{x^2}{16} + \frac{y^2}{49} = 1$

7. $\frac{(x-3)^2}{9} + \frac{(y-8)^2}{100} = 1$

8. $\frac{(x+7)^2}{4} + \frac{(y-5)^2}{25} = 1$

9. $9x^2 + 16y^2 = 144$

10. $49(x+12)^2 + 7(y-1)^2 = 49$

Sketch the graph of each ellipse. Then, graph any two, using a graphing calculator.

11. $\frac{x^2}{9} + \frac{y^2}{25} = 1$

12. $\frac{x^2}{36} + y^2 = 1$

13. $\frac{(x-3)^2}{16} + \frac{y^2}{4} = 1$

14. $\frac{(x+1)^2}{81} + \frac{(y-2)^2}{49} = 1$

15. $\frac{(x-5)^2}{4} + \frac{(y-6)^2}{25} = 1$

16. $\frac{x^2}{100} + (y+3)^2 = 1$

17. $9x^2 + 36y^2 = 144$

18. $(x+3)^2 + 4(y-2)^2 = 36$

19. $4x^2 + (y+1)^2 = 9$

20. $15(x+2)^2 + \frac{(y+3)^2}{4} = 4$

Write the equation for each ellipse in standard form and general form.

21. centre (3, -2), passing through (-4, -2), (10, -2), (3, 1), and (3, -5)

22. centre (-1, -2), passing through (-5, -2), (3, -2), (-1, 4), and (-1, -8)

23. foci at (0, 0) and (0, 8), sum of focal radii 10

24. foci at (-1, -1) and (9, -1), sum of focal radii 26

For each ellipse, determine the

- a) coordinates of the centre
- b) lengths of the major and minor axes
- c) coordinates of the foci

25. $3x^2 + y^2 + 6x - 8y - 11 = 0$

26. $x^2 + 121y^2 - 726y + 968 = 0$

27. $9x^2 + 25y^2 - 9x - 50y - 197.75 = 0$

22. $\frac{(x+1)^2}{36} + \frac{(y+2)^2}{16} = 1$;
 $9x^2 + 4y^2 + 18x + 16y - 119 = 0$
 23. $\frac{x^2}{9} + \frac{(y-4)^2}{25} = 1$; $25x^2 + 9y^2 - 72y - 81 = 0$
 24. $\frac{(x-4)^2}{169} + \frac{(y+1)^2}{144} = 1$;
 $144x^2 + 169y^2 - 1152x + 338y - 21863 = 0$
 25. a) (-1, 4) b) $2\sqrt{30}$, $2\sqrt{10}$
 c) (-1, 4 + $2\sqrt{5}$), (-1, 4 - $2\sqrt{5}$) 26. a) (0, 3) b) 22, 2
 c) $(2\sqrt{30}, 3)$, $(-2\sqrt{30}, 3)$ 27. a) $(\frac{1}{2}, 1)$ b) 10, 6
 c) $(\frac{2}{9}, 1)$, $(-\frac{2}{9}, 1)$

Section 3.4 pp. 150-152
 Practice 1. a) (4, 2) b) 6, 2 c) $(4 + 2\sqrt{2}, 2)$, $(4 - 2\sqrt{2}, 2)$
 2. a) (-3, 2) b) 6, 4 c) (-3, 2 + $\sqrt{5}$), (-3, 2 - $\sqrt{5}$)
 3. a) (2, -4) b) 4, 3
 c) $(2 - 4 + \frac{\sqrt{7}}{2}, 2 - 4 - \frac{\sqrt{7}}{2})$
 4. a) (-6, -4) b) 7, 5 c) (-6 + $\sqrt{6}$, -4), (-6 - $\sqrt{6}$, -4)
 5. a) (0, 0) b) 16, 12 c) $(2\sqrt{7}, 0)$, $(-2\sqrt{7}, 0)$ 6. a) (0, 0) b) 14, 8 c) (0, $\sqrt{33}$), (0, - $\sqrt{33}$) 7. a) (3, 8) b) 20, 6
 c) (3, 8 + $\sqrt{91}$), (3, 8 - $\sqrt{91}$) 8. a) (-7, 5) b) 10, 4
 c) (-7, 5 + $\sqrt{21}$), (-7, 5 - $\sqrt{21}$) 9. a) (0, 0) b) 8, 6
 c) $(\sqrt{7}, 0)$, $(-\sqrt{7}, 0)$ 10. a) (-12, 1) b) $2\sqrt{7}$, 2
 c) (-12, 1 + $\sqrt{6}$), (-12, 1 - $\sqrt{6}$)
 21. $\frac{(x-3)^2}{49} + \frac{(y+2)^2}{9} = 1$;
 $-9x^2 + 49y^2 - 54x + 196y - 164 = 0$