

For each parabola:

- a) State the roots
- b) Find the intercepts
- c) State whether there is a minimum or maximum value
- d) Find axis of symmetry
- e) Find the vertex
- f) Find domain and range
- g) Graph

1.  $y = 2 - x^2$

2.  $y = x^2 + 3x + 2$

3.  $y = -3(x + 2)^2 + 6$  (remove bracket first)

4.  $y = 6 + x - x^2$

5.  $y = (x - 2)^2 - 9$

6.  $y = -3x^2 + 3$

7.  $y = x^2 - 9x + 18$

8.  $y = -x^2 + 2x + 2$

9.  $y = 3x^2 + 5x - 2$

10.  $y = 6x^2 - x - 2$

For each of the following find:

- a) Axis of symmetry
- b) Vertex
- c) Minimum or maximum value
- d) Roots
- e) Sketch graph of  $f(x)$  and its inverse
- f) Domain and range of  $f(x)$

1.  $x^2 + x - 6 = f(x)$
2.  $f(x) = x^2 - 2x + 1$
3.  $f(x) = x^2 + 2x - 3$
4.  $f(x) = x^2 - 3x - 10$
5.  $f(x) = x^2 - 16$
6.  $f(x) = x^2 - 25$
7.  $f(x) = x^2 - 5x$
8.  $f(x) = x^2 + 3x$
9.  $f(x) = x^2 - 6x - 7$
10.  $f(x) = x^2 - 2x - 8$
11.  $f(x) = x^2 + x - 56$
12.  $f(x) = x^2 - 2x - 15$
13.  $f(x) = x^2 + 8x + 15$
14.  $f(x) = -x^2$
15.  $f(x) = 5x^2$
16.  $f(x) = -\frac{1}{7}x^2$
17.  $f(x) = x^2 + 2$
18.  $f(x) = 2(x^2 - 1)$
19.  $f(x) = -2(x^2 - 1)$
20.  $f(x) = -x^2 - x$
21.  $f(x) = -1 - x^2$
22.  $f(x) = -1 + 4x - x^2$
23.  $f(x) = x^2 + 2x - 8$
24.  $f(x) = 2x^2 - 4$
25.  $f(x) = 3 - x^2$

For each find:

- a) Axis of symmetry
- b) Vertex
- c) Roots
- d) Minimum or maximum value
- e) Sketch graph

1.  $y = x^2 - 1$
2.  $y = x^2 - 4$
3.  $y = 2x^2 + 1$
4.  $y = 1 - 2x^2$
5.  $y = x^2 - 2x$
6.  $y = x^2 + 2x$
7.  $y = 4x - x^2$
8.  $y = 4x + x^2$
9.  $y = x^2 - 2x - 3$
10.  $y = x^2 + 2x - 3$
11.  $y = x^2 + 2x + 1$
12.  $y = 3 - 2x - x^2$
13.  $y = x^2 + 5x - 6$
14.  $y = x^2 + 5x - 14$
15.  $y = x^2 - 2x - 63$
16.  $y = x^2 + x - 20$
17.  $y = x^2 - x - 42$
18.  $y = x^2 - 5x - 50$
19.  $y = x^2 - 2x - 8$
20.  $y = x^2 - 5x$
21.  $y = x^2 - 2x - 48$
22.  $y = 21 - 4x - x^2$
23.  $y = 9 - 4x^2$
24.  $y = 6 - x - x^2$
25.  $y = 36 + 5x - x^2$
26.  $y = 32 - 4x - x^2$

(Continued):

27.  $y = x^2 - 9x$

45.  $y = x^2 - 6x + 5$

28.  $y = x^2 + 8x + 16$

46.  $y = x^2 - 6x + 9$

29.  $y = x^2$

47.  $y = 3x^2 + 6x$

30.  $y = -4x^2$

48.  $y = 2x^2 - 11x + 5$

31.  $y = 2x^2$

49.  $y = 6x - x^2$

32.  $y = \frac{1}{2}x^2$

50.  $y = 3x^2 - 12x + 12$

33.  $y = \frac{1}{3}x^2$

51.  $y = 5 - 4x - x^2$

34.  $y = -2x^2$

52.  $y = 2 - x - x^2$

35.  $y = x^2 + 1$

53.  $y = 72 - x - x^2$

36.  $y = x^2 + 4$

54.  $y = x^2 - 8x + 12$

37.  $y = 3 - x^2$

55.  $y = x^2 + 2x - 24$

38.  $y = x^2 + 4x + 3$

56.  $y = 8 + 2x - x^2$

39.  $y = x^2 - 4x$

57.  $y = 12 - x - x^2$

40.  $y = -x^2 - x$

58.  $y = 20 + 8x - x^2$

41.  $y = x^2 - 3x + 2$

42.  $y = -1 - x^2$

43.  $y = x^2 - 2x - 15$

44.  $y = x^2 - 4x + 3$