Graphing Quadratics

$$y = a(x-h)^2 + k$$

Determine the following for each quadratic equation.

(a) Vertex
(b) Opens up/opens down
(c) Axis of Symmetry
(d) x-intercept
(e) y-intercept
(f) Sketch the parabola

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

2. $y = (x+2)^2$

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

4. $y = (x-4)^2$

5. $y = (x-1)^2 - 4$

6. $y = (x-1)^2 - 2$

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

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

9. $y = (x+3)^2 + 4$

10. $y = (x+3)^2 + 4$

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

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

13. $y = -(x-4)^2 + 2$

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

15. $y = -2(x-1)^2 + 6$

16. $y = -2(x-1)^2 + 6$

17. $y = -4(x+2)^2 - 8$

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

19. $y = 6(x+2)^2 - 6$

20. $y = 2(x+1)^2 - 6$

21. $y = 2(x-1)^2 + 4$

22. $y = 2(x-1)^2 + 6$

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

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

25. $y = x^2 + 4x$

26. $y = x^2 + 6x$

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

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

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

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

31. $y = 3x^2 + 12x + 13$

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