

Factor each expression. If the expression cannot be factored, say so.

1. $14 + x^2 + 9x$

2. $t^2 - 9t - 18$

3. $3n^2 + 8 + 10n$

4. $3x^2 - 14x + 15$

5. $-7t + 12t^2 - 12$

6. $5x^2 - 40x + 75$

7. $24 - m^2 - 10m$

8. $-6 - 4x^2 - 10x$

9. $-3x - 9x^2 + 12$

10. $2n^2 + 4n$

11. $-3n^2 + 12n$

12. $8x^2 + 4x$

Factor each expression. Look for *special patterns*. If the expression cannot be factored, say so.

13. $x^2 - 4$

14. $x^2 + 36$

15. $9x^2 - 1$

16. $-25 + 4x^2$

17. $x^2 + 16x + 64$

18. $p^2 - 10p + 25$

19. $16r^2 + 8r + 1$

20. $4 - 12p + 9p^2$

Rewrite the following quadratic functions in intercept or factored form.

21. $y = x^2 + 7x + 10$

22. $f(n) = -35 - 2n + n^2$

23. $f(x) = 8 - 10x + 2x^2$

24. $y = 5x^2 + 10x$

25. $g(x) = -25 + x^2$

26. $y = 18 + p^2 + 9p$

27. $f(x) = 3x^2 - 12$

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

29. $y = 4x^2 - 19x - 5$

30. $f(t) = 20t^2 + 14t - 12$

31. $f(x) = 9x^2 - 4$

32. $y = 9 + 12x + 4x^2$

33. $h(x) = 25x^2 - 1$

34. $y = 3x^2 - 3x$

35. $g(m) = 3m^2 + 5 - 8m$

For each quadratic function in vertex form, do the following: a) rewrite the function in standard form, b) rewrite the function in intercept form, c) find the vertex, d) find the y -intercept, e) find the x -intercepts. (Hint: which form of the equation is the easiest form to find the vertex, y -intercept, x -intercepts?)

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

a. standard form

b. intercept form

c. vertex

d. y -intercept

e. x -intercepts

37. $y = (x - 1)^2 - 9$

a. standard form

b. intercept form

c. vertex

d. y -intercept

e. x -intercepts

38. $f(x) = (x + 3)^2 - 4$

a. standard form

b. intercept form

c. vertex

d. y -intercept

e. x -intercepts