

Factor completely.

1. $x^2 - 9$ 2. $b^2 + 3b - 10$ 3. $2x^2 - 18x + 36$ 4. $4h^2 - 49$ 5. $x^2 - 11x + 24$
6. $6x^2 + 11x - 7$ 7. $-6m^4 - 51m^3 - 45m^2$ 8. $12x^3 - 27x$ 9. $-8x^2 + 26x - 20$

Find the roots.

10. $p(x) = 3(x+7)^2 - 27$ 11. $q(x) = -\frac{1}{2}(x-12)^2 + 8$

Find the equation for the line of symmetry and the vertex.

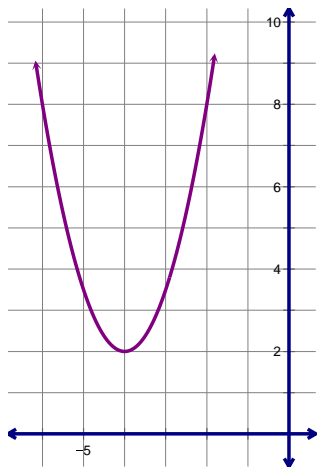
12. $w(x) = x^2 + 8x - 10$ 13. $z(x) = -2x^2 - 20x + 11$

Rewrite the function in standard form.

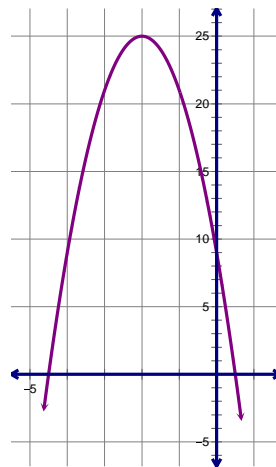
14. $f(x) = -2(x-3)^2 + 23$ 15. $g(x) = 5x(3x-4)(x+2)$

Find the equation of the function in:

16. standard and vertex forms



17. factored and standard forms



18. All 3 forms – V: (2,108)
point (7,33)

19. All 3 forms - roots $x=5$, $x=9$
point (-1,30)

Sketch a complete graph.

20. $m(x) = 2(x-2)(x+4)$ 21. $k(x) = 4x^2 + 16x + 7$ 22. $k(x) = -(x-5)^2 + 9$

Rewrite in vertex form by completing the square.

23. $f(x) = x^2 + 2x + 8$ 24. $f(x) = x^2 - 6x - 13$ 25. $f(x) = 2x^2 - 12x + 16$ 26. $f(x) = 5x^2 - 15x - 21$

Solve by completing the square.

27. $a^2 + 16 = -10a$ 28. $5x^2 - 35x + 40 = -20$

Solve using the quadratic formula.

29. $x^2 + 4x + 1 = 0$ 30. $2x^2 - 1 = 6x$ 31. $4x^2 + 1 = -8x$