

In Exercises 1–10, solve the equation by factoring.

1. $q^3 - q^2 - 30q = 0$

2. $k^3 + 6k^2 + 9k = 0$

3. $3y^4 - 6y^3 = -3y^2$

4. $n^3 + 2n^2 - 9n - 18 = 0$

5. $3p^3 = 21p$

6. $8u^6 = 16u^4$

7. $4x^4 + 12x^3 + 9x^2 = 0$

8. $6h^5 = 12h^3$

9. $16q^4 - 8q^2 + 1 = 0$

10. $w^4 + 81 = 18w^2$

In Exercises 7–10, use your calculator or Desmos to graph each function and find the zeroes. Make sure to list any multiplicity.

11. $f(x) = x^4 + x^3 - 12x^2$

12. $g(x) = x^4 - 8x^2 + 16$

13. $h(x) = x^5 - 2x^4 - 15x^3$

14. $f(x) = -3x^3 - 15x^2 - 12x$

15. $f(x) = -5x^4 + 20x^3 + 60x^2$

16. $g(x) = -x^3 - x^2 + 30x$

17. $h(x) = x^3 + x^2 - 4x - 4$

18. $f(x) = x^3 - 4x^2 - 9x + 36$