

Finding Polynomial Roots Review**Solve by factoring.**

1. $100x^2 - 36 = 0$

2. $64x^2 - 1 = 0$

3. $81x^2 - 400 = 0$

4. $121 - 16x^2 = 0$

5. $x^2 + 17x + 42 = 0$

6. $x^2 - 26x + 48 = 0$

7. $x^2 + 5x - 104 = 0$

8. $2x^2 - 8x - 120 = 0$

9. $7x^2 - 40x - 12 = 0$

10. $3x^2 + 20x - 32 = 0$

11. $6x^2 + 23x - 4 = 0$

12. $5x^2 - 3x - 36 = 0$

Divide, using the method of your choice.

13. $(-2x^2 + 35) \div (x - 4)$

14. $\frac{20y^3 + 23y^2 - 13y + 9}{5y^2 - 3y + 2}$

15. $\frac{x^3 + x^2 - 10x + 13}{x - 2}$

Unit 1 (6.4)

16. $(x^3 - 27) \cdot (x - 3)^{-1}$

17. $(2x^3 + 5x^2 - 2x - 15) \div (2x - 3)$

18. $\frac{x^4 - 3x^3 + 5x - 6}{x + 2}$

19. $\frac{2x^4 - x^3 + x^2 + x - 3}{x^2 - 1}$

20. $(x^3 - x^2 - 6) \cdot (x + 2)^{-1}$

21. $(3x^4 + 5x^3 - 61x^2 + 95x - 42) \div (x^2 + 5x - 6)$

22. $\frac{4x^3 + 29x^2 + 45x - 50}{x + 5}$

Unit 1 (6.4)

23. Given that $x + 3$ is a factor of $x^3 + 6x^2 + 11x + 6$, find the other roots.

24. Given that $x - 1$ is a factor of $2x^3 - 5x^2 - 17x + 20$, find the other roots.

25. Given that $x = 3$ is a root of $x^3 - 6x^2 + 14x - 15$, find the other roots.

26. Given that $x = -1$ and $x = 2$ are roots of $x^4 - 2x^3 + x^2 - 4$, what are the other roots?

Unit 1 (6.4)

27. Given that $x = 4$ and $x = -3$ are roots of $x^4 - 15x^3 + 132x^2 + 38x - 1560$, what are the other roots?

Use your graphing calculator and synthetic division to find the roots of the function.

28. $f(x) = x^4 - 7x^3 + 13x^2 + x - 20$

29. $f(x) = x^4 - 5x^2 - 36$

30. $f(x) = x^3 - 10x^2 + 18x - 4$

31. $f(x) = 2x^4 + 7x^3 - 2x^2 - 19x - 12$

Unit 1 (6.4)

32. $f(x) = x^4 - 4x^3 + x^2 + 16x - 20$

33. $f(x) = 4x^4 + 5x^3 + 30x^2 + 45x - 54$

34. The width of a box is 3 times the length. The height is 2 inches less than the length. The volume is 1152 in^3 . Find the dimensions of the box.

35. A box measures $19\text{in} \times 29\text{in} \times 16\text{in}$. You would like to decrease each dimension by a small amount in order to reduce the volume to 92 more than half the original. How much should you take off of each side? What are the new dimensions?

36. The length of a box is 3 more than twice the height. The width is 4 inches less than the height. The volume is 357 in^3 . Find the dimensions of the box.

37. A box measures $11\text{in} \times 24\text{in} \times 15\text{in}$. You would like to increase each dimension by a small amount so that the new volume is 1170 less than three times the original. How much should you add to each side? What are the new dimensions?