

The Weekly Rigor

No. 199

“A mathematician is a machine for turning coffee into theorems.”

April 14, 2018

39 Problems in Solving Equations

(Part 1)

PROBLEMS

For each of the following equations, find all solutions for the unknown variable.

1. $2x^2 + 15x + 18 = 0$

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

3. $3x^2 + 6x + 4x + 8 = 0$

4. $2n^3 + 2n = 0$

5. $6x^3 - 6x^2 - 2x^2 + 2x = 0$

6. $12x^3 - 8x^2 - 24x + 16 = 0$

7. $\theta^2 - 25 = 0$

8. $\alpha(\alpha + 7) + 3(\alpha + 7) = 0$

9. $5a^2 - 45 = 0$

10. $7x^2 - 28x + 21 = 0$

11. $3x^2 - 75 = 0$

12. $6x^2 + 12x + 8x + 16 = 0$

13. $5x^3 - 20x + 3x^2 - 12 = 0$

14. $12x^3 - 4x^2 - 8x = 0$

15. $12x^6 - 12x^5 + 24x^4 - 24x^3 = 0$

16. $10t^2 + 46t + 24 = 0$

17. $x^3 + x^2 = 0$

18. $6x^3 + 21x^2 + 6x + 21 = 0$

19. $9x^4 - 144x^2 = 0$

20. $4t^3 - 4t = 0$

21. $20x^3 + 50x^2 - 30x = 0$

22. $11x^3 - 22x^2 + 55x - 110 = 0$

$$23. 8x^2 - 162 = 0$$

$$24. 24r^4 + 40r^3 + 30r^2 + 50r = 0$$

$$25. 3x^5 - 3x + 5x^4 - 5 = 0$$

$$26. 3x^2 - 27 = 0$$

$$27. x^5 - 4x^4 - 12x^3 = 0$$

$$28. 2x^2 + 8x + 10x + 40 = 0$$

$$29. 3x^2 + 12x + 12 = 0$$

$$30. 18x^3 - 8x = 0$$

$$31. 15p^2 + 80p + 80 = 0$$

$$32. 49x^2 - 64 = 0$$

$$33. x^4 - 25 = 0$$

$$34. 36x^4 - 9 = 0$$

$$35. 2x^3 + 8x^2 - 3x - 12 = 0$$

$$36. (x - 4)^2 - 9 = 0$$

$$37. (x - 10)^2 - 20 = 0$$

$$38. x^2 - 24 = 0$$

$$39. 3x^2 - 120 = 0$$

“Only he who never plays, never loses.”