

**Factor completely if possible and find the roots:**

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|----------------------|-----------------------|----------------------|-----------------------|
| 1. $x^2 + 5x + 4$    | 2. $x^2 + 12x + 32$   | 3. $x^2 + 15x + 50$  | 4. $a^2 - 5a - 24$    |
| 5. $m^2 + 15m + 54$  | 6. $x^2 - 33x + 32$   | 7. $x^2 - 12x + 20$  | 8. $b^2 + b - 72$     |
| 9. $d^2 - 25d + 156$ | 10. $b^2 - 10b + 24$  | 11. $f^2 - 11f - 26$ | 12. $2x^2 + 5x + 2$   |
| 13. $x^2 - 100$      | 14. $5x^2 - 9x - 2$   | 15. $3x^2 + 7x + 2$  | 16. $4x^2 - 5x + 1$   |
| 17. $2x^2 + 11x + 5$ | 18. $5x^2 - 11x + 2$  | 19. $7x^2 - 9x + 2$  | 20. $4x^2 + 17x - 15$ |
| 21. $4x^2 - 8x - 5$  | 22. $-2x^2 - 9x + 10$ | 23. $-4x^2 + 8x + 5$ |                       |

**Rewrite in factored form:**

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|--------------------------|--------------------------|-------------------------|---------------------------|
| 24. $y = x^2 + 2x - 48$  | 25. $y = x^2 + 6x - 72$  | 26. $y = x^2 + 2x + 80$ | 27. $y = x^2 - 6x + 9$    |
| 28. $y = 2x^2 + 11x + 5$ | 29. $y = 5x^2 - 11x + 2$ | 30. $y = 7x^2 - 9x + 2$ | 31. $y = 4x^2 + 17x - 15$ |
| 32. $y = 12x^2 - 8x + 1$ | 33. $y = 8x^2 + 6x - 9$  | 34. $y = 9x^2 + 3x - 2$ | 35. $y = 7x^2 - 11x - 6$  |

**Rewrite in standard form:**

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|------------------------|------------------------|
| 36. $y = 2(x-3)^2 + 4$ | 37. $y = -(x+4)^2 - 3$ |
| 38. $y = 2(x-3)(x+5)$  | 39. $y = (x-4)(x-6)$   |

**For the following questions say if they are a polynomial or not. If yes, then state how many terms they have. If no, say why not.**

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|-------------------------------------|-------------------------------|---------------------------|
| 40. $y = 5x^8 - 11x^2 + 2$          | 41. $y = -4x^2 - 3x^{-1} + 7$ | 42. $y = 10x^4 - 3^x + 9$ |
| 43. $y = \frac{3}{x^{-2}} + 3x + 7$ |                               |                           |

**Graph the following equations using any method you chose. Make sure to label the x-intercepts, vertex, roots and line of symmetry.**

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|--------------------------|----------------------|------------------------|
| 44. $y = 2x^2 + 10x + 3$ | 45. $y = (x-2)(x+4)$ | 46. $y = 2(x-3)^2 - 8$ |
|--------------------------|----------------------|------------------------|

**Solve for x:**

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|-----------------|--------------------|-------------------------|-------------------|
| 47. $3x^2 = 27$ | 48. $(x-4)^2 = 30$ | 49. $2(x+1)^2 - 4 = 14$ | 50. $x^2 - 5 = 0$ |
|-----------------|--------------------|-------------------------|-------------------|