

Match the polynomial with its factorization.

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|-----------------------------------|---|--------------------------|
| 7. $2x^4 + 14x^2 + 24$ | D | A. $2(x+2)(x-2)(x^2+3)$ |
| 8. $2x^4 - 2x^2 - 24$ | A | B. $3(x^2+5)(x^2+1)$ |
| 9. $3x^4 + 18x^2 + 15$ | B | C. $3x^2(x+3)(x-3)(x-1)$ |
| 10. $3x^4 - 12x^2 - 15$ | F | D. $2(x^2+4)(x^2+3)$ |
| 11. $3x^5 - 3x^4 - 27x^3 + 27x^2$ | C | E. $3x^2(x^2+9)(x-1)$ |
| 12. $3x^5 - 3x^4 + 27x^3 - 27x^2$ | E | F. $3(x^2-5)(x^2+1)$ |

Factor the polynomial.

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|------------------|-----------------------|-----------------------|
| 13. $x^4 - 9$ | 14. $x^4 - 5x^2 + 4$ | 15. $x^4 - x$ |
| 16. $3x^4 - 24x$ | 17. $x^4 + 9x^2 + 14$ | 18. $x^4 + 9x^2 + 18$ |

Solve the polynomial equation.

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|-------------------------|----------------------------|-----------------------|
| 19. $x^4 - 1 = 0$ | 20. $x^4 - 8x^2 + 15 = 0$ | 21. $x^4 + 2x^2 = 8$ |
| 22. $x^5 + 7x^3 = -12x$ | 23. $2x^4 + 6x^2 - 36 = 0$ | 24. $x^4 - 4x^2 = 21$ |

13.) $x^4 - 9$
 $(x^2 - 3)(x^2 + 3)$

14.) $x^4 - 5x^2 + 4$
 $(x^2 - 4)(x^2 - 1)$
 $(x+2)(x-2)(x+1)(x-1)$

15.) $x^4 - x$
 $x(x^3 - 1)$
 $x(x-1)(x^2 + x + 1)$

16.) $3x^4 - 24x$
 $3x(x^3 - 8)$
 $3x(x-2)(x^2 + 2x + 4)$

17.) $x^4 + 9x^2 + 14$
 $(x^2 + 7)(x^2 + 2)$

18.) $x^4 + 9x^2 + 18$
 $(x^2 + 6)(x^2 + 3)$

19.) $x^4 - 1 = 0$
 $(x^2 - 1)(x^2 + 1) = 0$
 $(x-1)(x+1)(x^2 + 1) = 0$
 $x = 1, -1, \pm 1i$

20.) $x^4 - 8x^2 + 15 = 0$
 $(x^2 - 5)(x^2 - 3) = 0$
 $x = \pm\sqrt{5}, \pm\sqrt{3}$

21.) $x^4 + 2x^2 - 8 = 0$
 $(x^2 + 4)(x^2 - 2) = 0$
 $x = \pm 2i, \pm\sqrt{2}$

$$22.) x^5 + 7x^3 + 12x = 0$$

$$x(x^4 + 7x^2 + 12) = 0$$

$$x(x^2 + 4)(x^2 + 3) = 0$$

$$x = 0, \pm 2i, \pm i\sqrt{3}$$

$$23.) 2x^4 + 6x^2 - 36 = 0$$

$$2(x^4 + 3x^2 - 18) = 0$$

$$2(x^2 + 6)(x^2 - 3) = 0$$

$$x = \pm i\sqrt{6}, \pm\sqrt{3}$$

$$24.) x^4 - 4x^2 - 21 = 0$$

$$(x^2 - 7)(x^2 + 3) = 0$$

$$x = \pm\sqrt{7}, \pm i\sqrt{3}$$