

Polynomial Test Practice

Combine the polynomials

1. $(4x^4 - 3x^2 + 2x - 1) + (5x^3 - 4x^2 - 6x - 1)$
2. $(4x^4 - 3x^2 + 2x - 1) - (5x^3 - 4x^2 - 6x - 1)$

Multiply

3. $\frac{1}{2}x \cdot (8x^4 - 7x^3 + 6x^2)$
4. $(5x - 8)(2x - 7)$
5. $(x^2 - 10)(x^3 - 2x^2 - 3x + 1)$
6. $(x^2 + 4)(4 - x^2)$

Factor

7. $x^2 - x - 72$
8. $x^2 - 121$
9. $4x^2 + 28x + 45$
10. $-2x^3 + 11x^2 - 5x$
11. $9x^2 + 6x + 1$
12. $4x^2 - 9$
13. $8x^3 - 125$
14. $-50x^3 + 8x$

Solve

15. $x(x - 3)(2x + 1) = 0$
16. $x^3 + 1 = 0$
17. $x^2 + 3x = 108$
18. $4x^2 + 45 = 27x$
19. $8x^2 - 2 = 0$
20. $1000x^3 = 8$
21. Give an example of a pair of binomials that multiply to be a binomial.
22. Give an example of a pair of binomials that multiply to be a trinomial.
23. Give an example of a pair of binomials that multiply to be a 4-term polynomial.
24. Given $\triangle CAT \sim \triangle DOG$, find x . The shortest side of $\triangle CAT$ is 5 and its longest side is $x - 1$. The shortest side of $\triangle DOG$ is $2x$ and its longest side is 8. (\sim means, "similar to".)

ANSWERS

1. $4x^4 + 5x^3 - 7x^2 - 4x - 2$
2. $4x^4 - 5x^3 + x^2 + 8x$
3. $4x^5 - \frac{7}{2}x^4 + 3x^3$
4. $10x^2 - 51x + 56$
5. $x^5 - 2x^4 - 13x^3 + 21x^2 + 30x - 10$
6. $16 - x^4$
7. $(x + 8)(x - 9)$
8. $(x + 11)(x - 11)$
9. $(2x + 5)(2x + 9)$
10. $-x(2x - 1)(x - 5)$
11. $(3x + 1)^2$
12. $(2x + 3)(2x - 3)$
13. $(2x - 5)(4x^2 + 10x + 25)$
14. $-2x(5x + 2)(5x - 2)$
15. $x = -\frac{1}{2}, 0, 3$
16. $x = -1$
17. $x = -12, 9$
18. $x = 3, \frac{15}{4}$
19. $x = -\frac{1}{2}, \frac{1}{2}$
20. $x = \frac{1}{5}$
21. (Has to be a difference of squares, like $(x + 1)(x - 1)$.)
22. (Something like $(x - 1)(x + 2)$.)
23. (Something like $(x^2 - 1)(x + 3)$.)
24. $x = 5$ (Note that the $x = -4$ option doesn't make sense.)