ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 4 4 - Practice 1-45 ALL EVEN ODD Show Solı

1. $x^3 - 2x^2 - 24x = x(x^2 - 2x - 24)$
$= x(x - 6)(x + 4)$

3. $3p^5 - 192p^3 = 3p^3(p^2 - 64)$
$= 3p^3(p - 8)(p + 8)$

5. $2q^4 + 9q^3 - 18q^2 = q^2(2q^2 + 9q - 18)$
$= q^2(2q - 3)(q + 6)$

7. $10w^{10} - 19w^9 + 6w^8 = w^8(10w^2 - 19w + 6)$
$= w^8(2w - 3)(5w - 2)$

9. $x^3 + 64 = x^3 + 4^3$
$= (x + 4)(x^2 - 4x + 16)$

11. $g^3 - 343 = g^3 - 7^3$
$= (g - 7)(g^2 + 7g + 49)$

13. $4h^9 - 256h^6 = 4h^6(h^3 - 64)$
$= 4h^6(h - 4)(h^2 + 4h + 16)$

15. $16t^7 + 250t^4 = 2t^4(8t^3 + 125)$
$= 2t^4\left[(2t)^3 + 5^3\right]$
$= 2t^4(2t + 5)(4t^2 - 10t + 25)$

17. $x^2 + 9$ is not a factorable binomial because it is a sum of squares, not a difference of squares. The completely factored form is $3x^3 + 27x = 3x(x^2 + 9)$.

19. $y^3 - 5y^2 + 6y - 30 = y^2(y - 5) + 6(y - 5)$
$= (y^2 + 6)(y - 5)$

21. $3a^3 + 18a^2 + 8a + 48 = 3a^2(a + 6) + 8(a + 6)$
$= (3a^2 + 8)(a + 6)$

23. $x^3 - 8x^2 - 4x + 32 = x^2(x - 8) - 4(x - 8)$
$= (x^2 - 4)(x - 8)$
$= (x - 2)(x + 2)(x - 8)$

25. $4q^3 - 16q^2 - 9q + 36 = 4q^2(q - 4) - 9(q - 4)$
$= (4q^2 - 9)(q - 4)$
$= (2q - 3)(2q + 3)(q - 4)$

27. $49k^4 - 9 = (7k^2)^2 - 3^2$
$= (7k^2 - 3)(7k^2 + 3)$

29. $c^4 + 9c^2 + 20 = (c^2 + 5)(c^2 + 4)$

31. $16z^4 - 625 = (4z^2)^2 - 25^2$
$= (4z^2 + 25)(4z^2 - 25)$
$= (4z^2 + 25)(2z + 5)(2z - 5)$

33. $3r^8 + 3r^5 - 60r^2 = 3r^2(r^6 + r^3 - 20)$
$= 3r^2(r^3 + 5)(r^3 - 4)$

35. Find $f(4)$ by direct substitution.

$f(4) = 2(4)^3 + 5(4)^2 - 37(4) - 60$
$= 128 + 80 - 148 - 60$
$= 0$

Because $f(4) = 0$, the binomial $x - 4$ is a factor of $f(x) = 2x^3 + 5x^2 - 37x - 60$.

37. Find $h(-3)$ by direct substitution.

$h(-3) = 6(-3)^5 - 15(-3)^4 - 9(-3)^3$
$= -1458 - 1215 + 243$
$= -2430$

Because $h(-3) \neq 0$, the binomial $x + 3$ is not a factor of $h(x) = 6x^5 - 15x^4 - 9x^3$.

39. Find $h(-4)$ by direct substitution.

$h(-4) = 6(-4)^4 - 6(-4)^3 - 84(-4)^2 + 144(-4)$
$= 1536 + 384 - 1344 - 576$
$= 0$

Because $g(-4) = 0$, the binomial $x + 4$ is a factor of $h(x) = 6x^4 - 6x^3 - 84x^2 + 144x$.

41. Show that $g(-4) = 0$ by synthetic division.

−4	1	−1	−20	0
		−4	20	0
	1	−5	0	0

Because $g(-4) = 0$, you can conclude that $x + 4$ is a factor of $g(x)$ by the Factor Theorem. Use the result to write $g(x)$ as a product of two factors and then factor completely.

$$g(x) = x^3 - x^2 - 20x$$
$$= (x + 4)(x^2 - 5x)$$
$$= x(x + 4)(x - 5)$$

43. Show that $f(6) = 0$ by synthetic division.

6	1	−6	0	−8	48
		6	0	0	−48
	1	0	0	−8	0

Because $f(6) = 0$, you can conclude that $x - 6$ is a factor of $f(x)$ by the Factor Theorem. Use the result to write $f(x)$ as a product of two factors and then factor completely.

$$f(x) = x^4 - 6x^3 - 8x + 48$$
$$= (x - 6)(x^3 - 8)$$
$$= (x - 6)(x - 2)(x^2 + 2x + 4)$$

45. Show that $r(-7) = 0$ by synthetic division.

-7	1	0	-37	84
		-7	49	-84
	1	-7	12	0

Because $r(-7) = 0$, you can conclude that $x + 7$ is a factor of $r(x)$ by the Factor Theorem. Use the result to write $r(x)$ as a product of two factors and then factor completely.

$$r(x) = x^3 - 37x + 84$$
$$= (x + 7)(x^2 - 7x + 12)$$
$$= (x + 7)(x - 3)(x - 4)$$