ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 4 4 - Practice 2-46 ALL EVEN ODD Show Solu

2. $4k^5 - 100k^3 = 4k^3(k^2 - 25)$
$= 4k^3(k - 5)(k + 5)$

4. $2m^6 - 24m^5 + 64m^4 = 2m^4(m^2 - 12m + 32)$
$= 2m^4(m - 8)(m - 4)$

6. $3r^6 - 11r^5 - 20r^4 = r^4(3r^2 - 11r - 20)$
$= r^4(r - 5)(3r + 4)$

8. $18v^9 + 33v^8 + 14v^7 = v^7(18v^2 + 33v + 14)$
$= v^7(3v + 2)(6v + 7)$

10. $y^3 + 512 = y^3 + 8^3$
$= (y + 8)(y^2 - 8y + 64)$

12. $c^3 - 27 = c^3 - 3^3$
$= (c - 3)(c^2 + 3c + 9)$

14. $9n^6 - 6561n^3 = 9n^3(n^3 - 729)$
$= 9n^3(n^3 - 9^3)$
$= 9n^3(n - 9)(n^2 + 9n + 81)$

16. $270z^{11} - 80z^8 = 10z^8(27z^3 - 8)$

$= 10z^8(3z - 2)(9z^2 + 6z + 4)$

18. The polynomial is not completely factored.

$x^9 + 8x^3 = x^3(x^6 + 8)$

$= x^3[(x^2)^3 + 2^3]$

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

20. $m^3 - m^2 + 7m - 7 = m^2(m - 1) + 7(m - 1)$

$= (m^2 + 7)(m - 1)$

22. $2k^3 - 20k^2 + 5k - 50 = 2k^2(k - 10) + 5(k - 10)$

$= (2k^2 + 5)(k - 10)$

24. $z^3 - 5z^2 - 9z + 45 = z^2(z - 5) - 9(z - 5)$

$= (z^2 - 9)(z - 5)$

$= (z + 3)(z - 3)(z - 5)$

26. $16n^3 + 32n^2 - n - 2 = 16n^2(n + 2) - (n + 2)$

$= (16n^2 - 1)(n + 2)$

$= (4n - 1)(4n + 1)(n + 2)$

28. $4m^4 - 25 = (2m^2)^2 - 5^2$

$= (2m^2 - 5)(2m^2 + 5)$

30. $y^4 - 3y^2 - 28 = (y^2 - 7)(y^2 + 4)$

32. $81a^4 - 256 = (9a^2)^2 - 16^2$

$= (9a^2 - 16)(9a^2 + 16)$

$= (3a - 4)(3a + 4)(9a^2 + 16)$

34. $4n^{12} - 32n^7 + 48n^2 = 4n^2(n^{10} - 8n^5 + 12)$

$= 4n^2(n^5 - 2)(n^5 - 6)$

36. Find $g(-7)$ by direct substitution.

$g(-7) = 3(-7)^3 - 28(-7)^2 + 29(-7) + 140$

$= -1029 - 1372 - 203 + 140$

$= -2464$

Because $g(-7) \neq 0$, the binomial $x + 7$ is not a factor of $g(x) = 3x^3 - 28x^2 + 29x + 140$.

38. Find $g(6)$ by direct substitution.

$g(6) = 8(6)^5 - 58(6)^4 + 60(6)^3 + 140$

$= 62{,}208 - 75{,}168 + 12{,}960 + 140$

$= 140$

Because $g(6) \neq 0$, the binomial $x - 6$ is not a factor of $g(x) = 8x^5 - 58x^4 + 60x^3 + 140$.

40. Find $t(-2)$ by direct substitution.

$t(-2) = 48(-2)^4 + 36(-2)^3 - 138(-2)^2 - 36(-2)$

$= 768 - 288 - 552 + 72$

$= 0$

Because $t(-2) = 0$, the binomial $x + 2$ is a factor of $t(x) = 48x^4 + 36x^3 - 138x^2 - 36x$.

42. Show that $t(5) = 0$ by synthetic division.

5	1	−5	−9	45
		5	0	−45
	1	0	−9	0

Because $t(5) = 0$, you can conclude that $x - 5$ is a factor of $t(x)$ by the Factor Theorem. Use the result to write $t(x)$ as a product of two factors and then factor completely.

$$t(x) = x^3 - 5x^2 - 9x + 45$$
$$= (x - 5)(x^2 - 9)$$
$$= (x - 5)(x - 3)(x + 3)$$

44. Show that $s(-4) = 0$ by synthetic division.

−4	1	4	0	−64	−256
		−4	0	0	256
	1	0	0	−64	0

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

$$s(x) = x^4 + 4x^3 - 64x - 256$$
$$= (x + 4)(x^3 - 64)$$
$$= (x + 4)(x - 4)(x^2 + 4x + 16)$$

46. Show that $h(-2) = 0$ by synthetic division.

−2	1	−1	−24	−36
		−2	6	36
	1	−3	−18	0

Because $h(-2) = 0$, you can conclude that $x + 2$ is a factor of $h(x)$ by the Factor Theorem. Use the result to write $h(x)$ as a product of two factors and then factor completely.

$$h(x) = x^3 - x^2 - 24x - 36$$
$$= (x + 2)(x^2 - 3x - 18)$$
$$= (x + 2)(x + 3)(x - 6)$$