

More Factoring Polynomials Over the Real Numbers

Factor each polynomial completely over the set of real numbers.

1. $x^4 - 26x^2 + 25$
 $(x^2 - 25)(x^2 - 1)$
 $(x+5)(x-5)(x+1)(x-1)$
2. $x^3 + 6x^2 - 9x - 54$
 $x^2(x+6) - 9(x+6)$
 $(x^2 - 9)(x+6) = (x+3)(x-3)(x+6)$
3. $x^3 - 8x^2 - 9x + 72$
 $x^2(x-8) - 9(x-8)$
 $(x^2 - 9)(x-8) = (x+3)(x-3)(x-8)$
4. $3x^3 - x^2 - 3x + 1$
 $x^2(3x-1) - 1(3x-1)$
 $(x^2 - 1)(3x-1)$
 $(x-1)(x+1)(3x-1)$
5. $7x^3 - 5x^2 - 28x + 20$
 $x^2(7x-5) - 4(7x-5)$
 $(x^2 - 4)(7x-5)$
 $(x-2)(x+2)(7x-5)$
6. $2x^3 - 5x^2 - 18x + 45$
 $x^2(2x-5) - 9(2x-5)$
 $(x^2 - 9)(2x-5)$
 $(x-3)(x+3)(2x-5)$
7. $x^4 - 10x^2 + 9$
 $(x^2 - 9)(x^2 - 1)$
 $(x+3)(x-3)(x-1)(x+1)$
8. $x^4 - 16x^2 + 63$
 $(x^2 - 9)(x^2 - 7)$
 $(x+3)(x-3)(x^2 - 7)$
9. $x^4 - 13x^2 - 48$
 $(x^2 - 16)(x^2 + 3)$
 $(x-4)(x+4)(x^2 + 3)$
10. $x^4 - 20x^2 - 125$
 $(x^2 - 25)(x^2 + 5)$
 $(x-5)(x+5)(x^2 + 5)$
11. $x^4 - 12x^2 + 35$
 $(x^2 - 7)(x^2 - 5)$
12. $x^3 - 9x^2 - 16x + 144$
 $x^2(x-9) - 16(x-9)$
 $(x^2 - 16)(x-9)$
 $(x-4)(x+4)(x-9)$
13. $x^3 + 8x^2 - 4x - 32$
 $x^2(x+8) - 4(x+8)$
 $(x^2 - 4)(x+8)$
 $(x-2)(x+2)(x+8)$
14. $x^4 - 6x^2 - 27$
 $(x^2 - 9)(x^2 + 3)$
 $(x-3)(x+3)(x^2 + 3)$
15. $x^4 - 23x^2 - 50$
 $(x^2 - 25)(x^2 + 2)$
 $(x-5)(x+5)(x^2 + 2)$
16. $4x^4 - 25x^2 + 36$
 $(4x^2 - 9)(x^2 - 4)$
 $(2x-3)(2x+3)(x-2)(x+2)$