

**FACTORING BY GROUPING** Factor the polynomial.

13.  $x^3 + x^2 + 2x + 2$

14.  $y^3 - 9y^2 + y - 9$

15.  $z^3 - 4z^2 + 3z - 12$

16.  $c^3 + 7c^2 + 5c + 35$

17.  $a^3 + 13a^2 - 5a - 65$

18.  $2s^3 - 3s^2 + 18s - 27$

19.  $5n^3 - 4n^2 + 25n - 20$

**FACTORING COMPLETELY** Factor the polynomial completely.

23.  $x^4 - x^2$

25.  $3n^5 - 48n^3$

27.  $75c^9 - 3c^7$

29.  $32s^4 - 8s^2$

33.  $3w^4 + 24w^3 + 48w^2$

**SOLVING EQUATIONS** Solve the equation.

43.  $x^3 + x^2 - 4x - 4 = 0$

45.  $4y^3 - 7y^2 - 16y + 28 = 0$

47.  $3b^3 + 24b^2 + 45b = 0$

49.  $z^3 - 81z = 0$

51.  $12s - 3s^3 = 0$