Solve each equation. Check your solutions.

1) $a(a + 16) = 0$

2) $(q + 4)(3q - 15) = 0$

3) $(2b - 3)(3b - 8) = 0$

4) $(4n + 5)(3n - 7) = 0$

5) $3z^2 + 12z = 0$

6) $2x^2 = 5x$

7) $6x^2 = -4x$

8) $20x^2 = -15x$

9) $18x^2 = 15x$

10) Mr. Alim's science class launched a toy rocket from ground level with an initial upward velocity of 60 feet per second. The height h of the rocket in feet above the ground after t seconds is modeled by the equation $h = 60t - 16t^2$. How long was the rocket in the air before it returned to the ground?

Factor each polynomial.

11) $t^2h + 3t$

12) $6t^2 - 4t - 3t + 2$

13) $10m^3n^3 - 2mn^2 + 14mn$

14) $9x^2 - 3xy + 6x - 2y$