The following exercise is a mix of linear and quadratic equations.

Solve each equation using an appropriate technique.

1. $4x + 3 = 2x + 9$

2. $5x^2 = 3x$

3. $50 - x^2 = 25 - x - x^2$

4. $x^2 - 11x - 12 = 0$

5. $x^2 + 10x = 0$

6. $3(3x + 5) + 6 = 3$

7. $(y + 2)^2 = y^2 + 13$

8. $8x^2 - 2x - 3 = 0$

9. $3x^2 + 27x + 42 = 0$

10. $2x - 9 = \frac{x}{4}$

11. $(a + 2)(a - 4) = (a + 3)^2$

12. $6x^2 = x + 2$

13. $(x - 3)(x + 5) = -16$

14. $(b + 5)^2 = (b + 1)^2$

15. $x^3 - 6x^2 + 8x = 0$

16. $4x(x + 1) = 3$

17. $(2y + 3)^2 = (y + 1)(y - 3) + 3y^2$

18. $-2x^2 = -8x + 6$

19. $(5m + 2)^2 - 1 = (m - 3)(m + 5) + 24m^2$