

Chapter 4 Review for Test**Algebra 2****Find the product or quotient.**

1. $(2x - 2)^2$

2. $(c^8 - 6)(c^2 - 4c - 2)$

3. $(4x^3 + 20x^2 + 12x - 16) \div (x - 4)$

4. $(b + 3)(b + 3)(b + 2)$

5. $(3x^4 - 2x^3 + 5x - 3) \div (x^2 - 3x + 1)$

6. $(3x + 1)^3$

Solve each equation by factoring.

7. $p^2 + 12p = -32$

8. $x^2 + 2x = 0$

9. The volume V (in cubic feet) of a hot tub is modeled by the polynomial function

$V(x) = x^3 - 10x^2 + 11x + 70$, where x is the length of the hot tub.

- a. Explain how you know $x = -5$ is *not* a possible rational zero.
- b. Show that $x + 2$ is a factor of $V(x)$. Then factor $V(x)$ completely.

10. Let G be the number (in billions) of new green tea sales. Let J be the number (in billions) of new fruit juice sales. During a 20-year period, G and J can be modeled by the following equation, where t is the time (in years).

$$G = 6t^4 + 3t^3 - 2t^2 + 5t + 60$$

$$J = 3t^4 - 3t^3 + 5t^2 - 5t + 45$$

- a. Find a new model A for the total number of new green tea and fruit juice sales.
- b. Is the new function A *even*, *odd*, or *neither*? Explain your reasoning.