

CHAPTER 2 PRACTICE QUESTIONS

Directions: Complete the following open-ended problems as specified by each question stem. For extra practice after answering each question, try using an alternative method to solve the problem or check your work.

1. The variable b varies inversely as a , and $b = 13.5$ when $a = 4.5$. Find the constant of variation, write an equation for the relationship, and find b when a is 0.5.
2. Write an equation for the volume of a rectangular prism with a length of l inches, a width of w inches, and a height of 8 inches. Identify the type of variation and the constant of variation, then find the volume of the prism if the length of the base is 4 inches and the width of the base is 2 inches.
3. What are the roots of the polynomial $2x^3 + 26ix^2 - 44x$?
4. Simplify
$$\frac{x+1}{x^2+2x-3} \cdot \frac{x^2+x-6}{x^2-2x-3}$$
.
5. How many roots does $x^3 - 5x^2 + 144x - 720$ have? What are the roots?
6. Solve the equation $x^5 - x^4 = 2x^3 + 4x^2 + 24x$.
7. Simplify the expression
$$\frac{3}{x^2+x} + \frac{x+4}{x^2+2x+1}$$
.
8. The monthly payment, m , on a mortgage varies directly with the amount borrowed, A . If the monthly payment on a 30-year mortgage is \$7.82 for every \$2,000 borrowed, find a formula that relates the monthly payment to the amount borrowed for a mortgage with these terms. Then find the monthly payment when the amount borrowed is \$120,000.
9. A box has a volume given by $2x^3 - 3x^2 - 39x + 20$. If the height of the box is given by $2x - 1$, what is the area of the base? If the length is given by $x + 2$, find a sum of a polynomial and a rational expression that would be equivalent to the width.