

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.

- 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.
- 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.
- What are the roots of the polynomial $2x^3 + 26ix^2 - 44x$?
- Simplify $\frac{x+1}{x^2+2x-3} \cdot \frac{x^2+x-6}{x^2-2x-3}$.
- How many roots does $x^3 - 5x^2 + 144x - 720$ have? What are the roots?
- Solve the equation $x^5 - x^4 = 2x^3 + 4x^2 + 24x$.
- Simplify the expression $\frac{3}{x^2+x} + \frac{x+4}{x^2+2x+1}$.
- 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.
- 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.