6.3 I can demonstrate understanding of how to solve polynomial equations.

LEVEL 1

Find all zeros of the following functions.

1. $f(x) = 2x^3 + 3x^2 - 8x + 3$; given x = -3 is a zero

2. $f(x) = x^3 - 7x + 6$; given (x – 2) is a factor

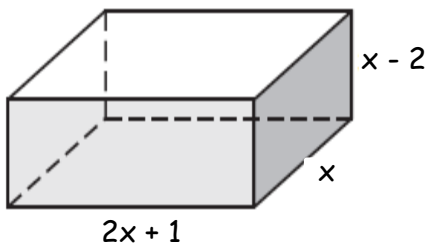3. Is (x - 3) a factor of $f(x) = 5x^3 + 2x^2 - 9x + 5$? Explain.

LEVEL 2/3

4. Find all (real and complex) roots of the polynomial $f(x) = x^3 - 3x^2 + 5x - 15$ given x = 3 is a solution.

5. Find all (real and complex) roots of the polynomial $f(x) = x^4 - 9x^3 + 23x^2 - 81x + 126$ (You will need to divide twice)
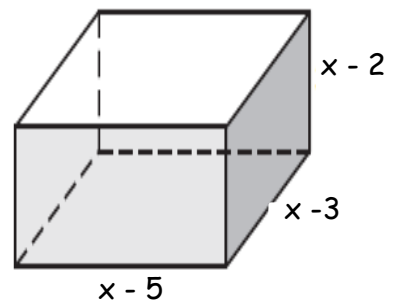
6. Write and solve a polynomial equation to find the dimensions of the solid with the given volume:

    a.   V = 42 cm³   b.   V = 82 m³

x - 2

x

2x + 1

x - 2

x -3

x - 5

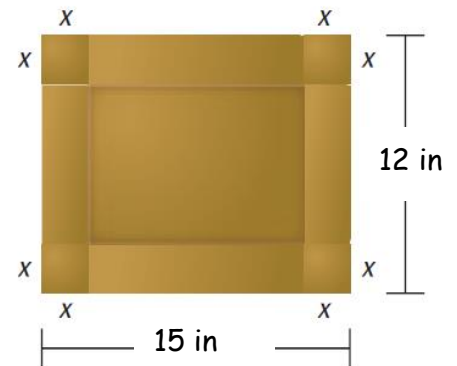   Dimensions:_____   Dimensions:_____

7. You have a piece of paper which you will use to make a box by cutting x inches from each corner as shown then folding up the sides.

    a.   Find all possible dimensions if the Volume is 150 in³

x   x

x   x

12 in

x   x

x   x

15 in

    b.   What is the maximum volume for the given solid?