

1. Use synthetic division to find the value of  $k$  that will guarantee that  $x+2$  is a factor of  $x^3 - kx^2 - 6x + 8$

2. The volume of a box has a width of  $(x-2)$  inches. The volume is expressed as a product of the length of its dimensions and is expressed by  $V(x) = x^3 + 2x^2 - 5x - 6$ . Use synthetic division and the given width to completely factor  $V(x)$ . Put the dimensions in the blanks.

The dimensions of the box are  $(x-2)$ , \_\_\_\_\_, and \_\_\_\_\_ inches.

3.  $(x^4 + 4x^2 - 45) \div (x^2 + 9)$