

Box Method for Dividing Polynomials

1. Draw your box. The height of the box should be one more than the degree of the polynomial you are dividing by. The length will be determined as we solve the problem. Go ahead and draw a few columns. You can add more later, if necessary.
2. Write the polynomial you are dividing by on the outside edge of the box. Include ZEROS if necessary. For example, $x^2 - 1$ should be $x^2 + 0x - 1$.
3. Write the first term of the polynomial being divided in the top left box.
4. Highlight the first few diagonals to make them easier to see.
5. Use the terms on the left edge and the filled in box to determine the first term on top of the box. Then, fill in the first column.
6. Determine what needs to be put in the box to make the next diagonal combine to make the next term in the polynomial. Fill in this box.
7. Use the terms on the left edge and the newly filled in box to determine the second term on top of the box. Now, fill in the second column.
8. Repeat this process until you write a constant on top of the box. Write an R above the last column. The terms in this column will form your remainder. Remember—there are two different ways to write the remainder
9. The polynomial on top of the box with its remainder is your final answer.

What is $(4x^3 - 2x^2 + 10x - 9)$ divided by $(x^2 - 1)$?

What is the quotient of $2x^4 - 11x^2 - 30x - 27$ divided by $x^2 + 2x + 3$?

What is $(x^4 - 4x^2 + 2x - 9)$ divided by $(x^2 + x + 1)$?

A rectangular prism has a volume of $8x^3 + 14x^2 + x - 2$ and a height of $2x + 1$. Find the area of the base of the prism. The formula for volume of a rectangular prism is $V = Bh$.