

Using Graphs of Functions to Understand the Remainder Theorem

Example 1:

- Use long division or synthetic division to determine if $x + 3$, $x + 1$, $x - 1$, and $x - 2$ are factors of $f(x) = x^2 + x - 1$.

	Is a factor	Is not a factor	Remainder
$x + 3$			
$x + 1$			
$x - 1$			
$x - 2$			

- Complete the chart of function values by plugging the x-values into the function $f(x) = x^2 + x - 1$.

x	f(x)
-3	
-1	
1	
2	

Example 2:

- Use long division or synthetic division to determine if $x + 3$, $x + 2$, $x + 1$, and $x - 2$ are factors of $f(x) = x^3 + 2x^2 - 4x + 3$.

	Is a factor	Is not a factor	Remainder
$x + 3$			
$x + 2$			
$x + 1$			
$x - 2$			

- Complete the chart of function values by plugging the x-values into the function $f(x) = x^3 + 2x^2 - 4x + 3$.

x	f(x)
-3	
-2	
-1	
2	

For each of these examples, what do the function values and the remainders have in common?