Polynomial FUNctions
Synthetic Division

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Synthetic Division:

We will use Excel to find $\mathbf{q(x)}$ & $\mathbf{r(x)}$, given $\mathbf{p(x)}$ & $\mathbf{d(x)}$; **d(x)** must be linear.

I have built two (2) Excel programs, one for **deg p(x) = 3** and the other for **deg p(x) = 4**. I will be happy to send them to you, just contact me.

You may not be able to see the colors.

Example 1: $\mathbf{p(x)} = 2\mathbf{x}^3 + 11\mathbf{x}^2 + 3\mathbf{x} - 31$ & $\mathbf{d(x)} = \mathbf{x} + 4$

Solution: We have already worked this using long division and obtained $\mathbf{q(x)} = 2\mathbf{x}^2 + 3\mathbf{x} - 9$ & $\mathbf{r(x)} = 5$

-4.00	2	11	3	-31
		-8	-12	36
	2	3	-9	5
		q(x)		r(x)

Yellow: Input

1. Coefficients of p(x)
2. Minus number in d(x)

Red: q(x)

Blue: r(x)

Example 4: Given $\mathbf{p(x)} = 3\mathbf{x}^4 + \mathbf{x}^3 - 13\mathbf{x}^2 - \mathbf{x} + 10$ & $\mathbf{d(x)} = \mathbf{x} + 1$, use the Excel program to verify that $\mathbf{q(x)} = 3\mathbf{x}^3 - 2\mathbf{x}^2 - 11\mathbf{x} + 10$ & $\mathbf{r(x)} = 0$

Solution:

We have

Yellow: Input

1. Coefficients of p(x)
2. Minus number in d(x)

Red: q(x)

Blue: r(x)

-1	**3**	**1**	**-13**	**-1**	**10**
		-3	**2**	**11**	**-10**
	3	**-2**	**-11**	**10**	**0**

