

Polynomial Puzzler

NAME _____

Fill in the empty spaces to complete the puzzle. In any row, the two left spaces should multiply to equal the right-hand space. In any column, the two top spaces should multiply to equal the bottom space.

1.

1	$x+7$	$x+7$
$-2x+5$	2	$-4x+10$
$-2x+5$	$2x+14$	$4x^2-18x+70$

2.

	$x-3$	
3	$-5x+1$	
		$30x^2-96x+18$

3.

-4	2	-8
$x+3$	$x-3$	x^2-9
$-4x-12$	$2x-6$	$-8x^2+72$

4.

$x+3$		
2		$8x$
	$12x$	

5.

		$2x+10$
$x+3$	7	
$2x+6$		

6.

6		
	$x+3$	
18		$36x^2+144x+108$

$$(2x^5 + 9x^4 - 8x^3 + 63x^2 + 30x + 72) \div (x+6)$$

$$\begin{array}{r|rrrrrr} -6 & 2 & 9 & -8 & 63 & 30 & 72 \\ & \downarrow & -12 & 18 & -60 & -18 & -72 \\ \hline & 2x^4 & -3x^3 & +10x^2 & +3x & +12 & 0 \end{array}$$

$$\begin{array}{r|rrrrr} 2x^4 & -3x^3 & +10x^2 & +3x & +12 \\ \times & 2x^5 & -3x^4 & +10x^3 & +3x^2 & +12x \\ \hline 6 & 12x^4 & -18x^3 & +60x^2 & +18x & +72 \end{array}$$

$$(3x^3 + 4x^2 - 2x - 1) \div (x+4)$$

$$\begin{array}{r|rrrr} -4 & 3 & 4 & -2 & -1 \\ & \downarrow & -12 & 32 & -120 \\ \hline & 3x^2 & -8x & +30 & -121 \end{array}$$

$$(x+4) \left(3x^2 - 8x + 30 - \frac{121}{x+4} \right)$$

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