ANSWER PRESENTATION TOOL

1.

$$x - 4\overline{)x^2 + x - 17}$$

$$\begin{array}{r} x + 5 \\ x^2 - 4x \\ \hline 5x - 17 \\ 5x - 20 \\ \hline 3 \end{array}$$

$$(x^2 + x - 17) \div (x - 4) = x + 5 + \frac{3}{x - 4}$$

3.

$$x^2 - 1\overline{)x^3 + x^2 + x + 2}$$

$$\begin{array}{r} x + 1 \\ x^3 + 0x^2 - x \\ \hline x^2 + 2x + 2 \\ x^2 + 0x - 1 \\ \hline 2x + 3 \end{array}$$

$$(x^3 + x^2 + x + 2) \div (x^2 - 1) = x + 1 + \frac{2x + 3}{x^2 - 1}$$

5.

$$4x^3 + x^2 - 2x - 3\overline{)8x^3 + 0x^2 - 3x + 1}$$

$$\begin{array}{r} 2 \\ 8x^3 + 2x^2 - 4x - 6 \\ \hline -2x^2 + x + 7 \end{array}$$

$$\frac{8x^3 + 0x^2 - 3x + 1}{4x^3 + x^2 - 2x - 3} = 2 + \frac{-2x^2 + x + 7}{4x^3 + x^2 - 2x - 3}$$

7.

$$
\begin{array}{r}
5x^2 - 12x + 37 \\
x^2 + 2x - 4 \overline{)\,5x^4 - 2x^3 - 7x^2 + 0x - 39} \\
\underline{5x^4 + 10x^3 - 20x^2} \\
-12x^3 + 13x^2 + 0x \\
\underline{-12x^3 - 24x^2 + 48x} \\
37x^2 - 48x - 39 \\
\underline{37x^2 + 74x - 148} \\
-122x + 109
\end{array}
$$

$$(5x^4 - 2x^3 - 7x^2 - 39) \div (x^2 + 2x - 4)$$

$$= 5x^2 - 12x + 37 + \frac{-122x + 109}{x^2 + 2x - 4}$$

9. Use synthetic division. Because the divisor is $x - 4$, $k = 4$.

4	1	8	1
		4	48
	1	12	49

$$\frac{x^2 + 8x + 1}{x - 4} = x + 12 + \frac{49}{x - 4}$$

11. Use synthetic division. Because the divisor is $x + 5 = x - (-5)$, $k = -5$.

−5	2	−1	7
		−10	55
	2	−11	62

$$\frac{2x^2 - x + 7}{x + 5} = 2x - 11 + \frac{62}{x + 5}$$

13. Use synthetic division. Because the divisor is $x + 3 = x - (-3)$, $k = -3$.

$$\begin{array}{r|cccc} -3 & 1 & 0 & -4 & 6 \\ & & -3 & 9 & -15 \\ \hline & 1 & -3 & 5 & -9 \end{array}$$

$$\frac{x^3 - 4x + 6}{x + 3} = x^2 - 3x + 5 - \frac{9}{x + 3}$$

15. Use synthetic division. Because the divisor is $x - 6$, $k = 6$.

$$\begin{array}{r|ccccc} 6 & 1 & -5 & -8 & 13 & -12 \\ & & 6 & 6 & -12 & 6 \\ \hline & 1 & 1 & -2 & 1 & -6 \end{array}$$

$$\frac{x^4 - 5x^3 - 8x^2 + 13x - 12}{x - 6} = x^3 + x^2 - 2x + 1 - \frac{6}{x - 6}$$

17. D; $(2)^2 + (2) - 3 = 3$ so the remainder must be 3.

19. C; $(2)^2 - (2) + 3 = 5$ so the remainder must be 5.

21. The quotient should be one degree less than the dividend.

$$\begin{array}{r|cccc} 2 & 1 & 0 & -5 & 3 \\ & & 2 & 4 & -2 \\ \hline & 1 & 2 & -1 & 1 \end{array}$$

$$\frac{x^3 - 5x + 3}{x - 2} = x^2 + 2x - 1 + \frac{1}{x - 2}$$

23.

-1	-1	-8	30
		1	7
	-1	-7	37

The remainder is 37. So, you can conclude from the Remainder Theorem that $f(-1) = 37$.

25.

2	1	-2	4	3
		2	0	8
	1	0	4	11

The remainder is 11. So, you can conclude from the Remainder Theorem that $f(2) = 11$.

27.

6	1	0	-6	1
		6	36	180
	1	6	30	181

The remainder is 181. So, you can conclude from the Remainder Theorem that $f(6) = 181$.

29.

3	1	0	6	-7	1
		3	9	45	114
	1	3	15	38	115

The remainder is 115. So, you can conclude from the Remainder Theorem that $f(3) = 115$.