Algebra 2   Bellwork   Monday, January 11, 2016

Find each quotient. Give any remainder in any form you wish.

1. $\dfrac{3x^3 - 5x^2 - 29x + 17}{x - 4}$

2. $\dfrac{4x^4 - 38x^2 + 20}{x + 3}$

3. Is $x + 6$ a factor of $5x^4 + 21x^3 - 53x^2 - 5x - 66$?

4. What is the remainder of this quotient? $\dfrac{4x^3 + 2x^2 - 11x + 15}{x - 1}$

5. Given $x - 2$ is a factor of $x^3 + 8x^2 + x - 42$ use synthetic division to help find the other two factors.

$x^3 + 8x^2 + x - 42 = (x - 2)(\qquad)(\qquad)$

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Find each quotient. Give any remainder in any form you wish.

1. $\dfrac{3x^3 - 5x^2 - 29x + 17}{x - 4}$ $3x^2 + 7x - 1$ $R = 13$

$$\begin{array}{r|rrrr} 4 & 3 & -5 & -29 & 17 \\ & & 12 & 28 & -4 \\ \hline & 3 & 7 & -1 & 13 \end{array}$$

2. $\dfrac{4x^4 - 38x^2 + 20}{x + 3}$ $4x^3 - 12x^2 - 2x + 6$ $R = 2$

$$\begin{array}{r|rrrrr} -3 & 4 & 0 & -38 & 0 & 20 \\ & & -12 & 36 & 6 & -18 \\ \hline & 4 & -12 & -2 & 6 & 2 \end{array}$$

3. Is $x + 6$ a factor of $5x^4 + 21x^3 - 53x^2 - 5x - 66$?   Yes, there is no remainder

$$\begin{array}{r|rrrrr} -6 & 5 & 21 & -53 & -5 & -66 \\ & & -30 & 54 & -6 & 66 \\ \hline & 5 & -9 & 1 & -11 & 0 \end{array}$$

$-$ or $-$ $f(-6) = 5(-6)^4 + 21(-6)^3 - 53(-6)^2 - 5(-6) - 66 = 0$

4. What is the remainder of this quotient? $\dfrac{4x^3 + 2x^2 - 11x + 15}{x - 1}$

Do synthetic division, long division, or find $f(1)$ $R = 10$

5. Given $x - 2$ is a factor of $x^3 + 8x^2 + x - 42$ use synthetic division to help find the other two factors.

$x^3 + 8x^2 + x - 42 = (x - 2)(x + 7)(x + 3)$

$$\begin{array}{r|rrrr} 2 & 1 & 8 & 1 & -42 \\ & & 2 & 20 & 42 \\ \hline & 1 & 10 & 21 & 0 \end{array}$$

$(x - 2)(x^2 + 10x + 21)$

$(x - 2)(x + 7)(x + 3)$

$\begin{array}{c} 4 \\ 7 \times 3 \\ 10 \end{array}$

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