Name: Grace

Course:

Date:

ALLIANCE UNIVERSITY

College Algebra

Preliminary Assessment #3

Directions: Find the quotient for the following problems using synthetic division. Provide complete responses to each question. Make sure to show your work.

1. $x^5 - 4x^3 + x$ ***divided by*** $x + 3$

$3 \mid 1 \quad 0 \quad -4 \quad 0 \quad +1$

$\quad\quad\quad -3 \quad +9 \quad -15 \quad +45$

$1 \quad -3 \quad +5 \quad -15 \quad +46$

$x^4 - 3x^3 + 5x^2 - 15x + 46$

2. $3x^4 - 6x^3 - 5x + 10$ ***divided by*** $x - 2$

$2 \mid 3 \quad -6 \quad +0 \quad -5 \quad +10$

$\quad\quad\quad 6 \quad 0 \quad 0 \quad -10$

$3 \quad 0 \quad 0 \quad -5 \quad 0$

$3x^3 + x^2 + 2x - 1 \quad R = \frac{12}{x-7}$

3. $2x^4 - x^3 + 2x - 1$ ***divided by*** $x - \frac{1}{2}$

$\frac{1}{2} \mid 1 \quad -1 \quad +0 \quad +2 \quad -1$

$\quad\quad\quad 1 \quad 0 \quad 0 \quad +1$

$2 \quad 0 \quad 0 \quad 2 \quad 0$

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$x-\frac{1}{2}$ is a factor of the divided.

4. $3x^4 + x^3 - 3x + 1$ *divided by* $x + \frac{1}{3}$

$$\begin{array}{c|cccc} -\frac{1}{3} & 3 & +1 & +0 & -3 & +1 \\ & \downarrow & -1 & 0 & 0 & +1 \\ \hline & 3 & 0 & 0 & -3 & 2 \end{array}$$

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

5. $-4x^3 + 5x^2 + 8$ *divided by* $x + 3$

$$\begin{array}{c|cccc} -3 & -4 & +5 & +0 & +8 \\ & \downarrow & +12 & -51 & +153 \\ \hline & -4 & 17 & -51 & 161 \end{array}$$

$-4x^2 + 17x - 51 \quad R = \frac{161}{x+3}$

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6. $4x^4 - 15x^2 - 4$ *divided by* $x - 2$

$$\begin{array}{c|ccccc} 2 & 4 & +0 & -15 & +0 & -4 \\ & \downarrow & 8 & 16 & 2 & 4 \\ \hline & 4 & 8 & 1 & 2 & 0 \end{array}$$

$4x^3 + 8x^2 + x + 2$

$R = 0$

7. $2x^6 - 18x^4 + x^2 - 9$ *divided by* $x + 3$

$$\begin{array}{c|ccccccc} -3 & 2 & +0 & -18 & +0 & +1 & +0 & -9 \\ & \downarrow & -6 & +18 & 0 & 0 & -3 & +9 \\ \hline & 2 & -6 & 0 & 0 & 1 & -3 & 0 \end{array}$$

$2x^5 - 6x^4 + x^3 + x^2 + x - 3$ $\quad R = 0$

8. $x^6 - 16x^4 + x^2 - 16$ *divided by* $x + 4$

$$\begin{array}{c|ccccccc} -4 & 1 & +0 & -16 & +0 & +1 & +0 & -16 \\ & \downarrow & -4 & +16 & -0 & 0 & -4 & +16 \\ \hline & 1 & -4 & 0 & 0 & 1 & -4 & 0 \end{array}$$

$x^5 - 4x^4 + x^3 + x^2 + x - 4$ $\quad R = 0$