

Name: Answer Key

Date: \_\_\_\_\_

Teacher: A. Zito

Math 48N (Kuta - Math Infinite Algebra)

Polynomial Long Division

$$\begin{array}{r} m^2 + m - 9 \\ m-7 \overline{) m^3 - 6m^2 - 16m + 63} \\ \underline{m^3 - 7m^2} \phantom{+ 63} \\ 1m^2 - 16m \phantom{+ 63} \\ \underline{1m^2 - 7m} \phantom{+ 63} \\ -9m + 63 \\ \underline{-9m + 63} \\ \emptyset \end{array}$$

$$\begin{array}{r} v^2 - 10v + 2 \\ v+8 \overline{) v^3 - 2v^2 - 78v + 16} \\ \underline{v^3 + 8v^2} \phantom{+ 16} \\ -10v^2 - 78v \phantom{+ 16} \\ \underline{-10v^2 - 80v} \phantom{+ 16} \\ 2v + 16 \\ \underline{2v + 16} \\ \emptyset \end{array}$$

$$\begin{array}{r} k^2 + 5k + 9 \\ k-8 \overline{) k^3 - 3k^2 - 31k - 72} \\ \underline{k^3 - 8k^2} \phantom{- 72} \\ 5k^2 - 31k \phantom{- 72} \\ \underline{5k^2 - 40k} \phantom{- 72} \\ 9k - 72 \\ \underline{9k - 72} \\ \emptyset \end{array}$$

$$\begin{array}{r} x^2 - 3x + 10 \\ x-5 \overline{) x^3 - 8x^2 + 25x - 50} \\ \underline{x^3 - 5x^2} \phantom{- 50} \\ -3x^2 + 25x \phantom{- 50} \\ \underline{-3x^2 + 15x} \phantom{- 50} \\ 10x - 50 \\ \underline{10x - 50} \\ \emptyset \end{array}$$

$$\begin{array}{r} -9x^2 + 5x - 1 \\ x-9 \overline{) -9x^3 + 86x^2 - 46x + 9} \\ \underline{-9x^3 + 81x^2} \phantom{+ 9} \\ 5x^2 - 46x \phantom{+ 9} \\ \underline{5x^2 - 45x} \phantom{+ 9} \\ -1x + 9 \\ \underline{-1x + 9} \\ \emptyset \end{array}$$

$$\begin{array}{r} n^2 \\ n+8 \overline{) n^3 + 8n^2} \\ \underline{n^3 + 8n^2} \\ \emptyset \end{array}$$

$$\begin{array}{r} \textcircled{7} \quad x-1 \overline{) \begin{array}{r} x^2+4x+9 \\ x^3+3x^2+5x-9 \\ \underline{x^3-x^2} \\ 4x^2+5x \\ \underline{4x^2-4x} \\ 9x-9 \\ \underline{9x-9} \\ \emptyset \end{array}} \end{array}$$

$$\begin{array}{r} \textcircled{8} \quad x+7 \overline{) \begin{array}{r} x^2-6x+3 \\ x^3+x^2-39x+21 \\ \underline{x^3+7x} \\ -6x-39x \\ \underline{-6x-42x} \\ 3x+21 \\ \underline{3x+21} \\ \emptyset \end{array}} \end{array}$$

$$\begin{array}{r} \textcircled{9} \quad x+5 \overline{) \begin{array}{r} x^3-2x^2-1x-4 \\ x^4+3x^3-11x^2-9x-20 \\ \underline{x^4+5x^3} \\ -2x^3-11x^2 \\ \underline{-2x^3-10x^2} \\ -1x^2-9x \\ \underline{-1x^2-5x} \\ -4x-20 \\ \underline{-4x-20} \\ \emptyset \end{array}} \end{array}$$

$$\begin{array}{r} \textcircled{10} \quad x+2 \overline{) \begin{array}{r} 7x^2-2x-6 \\ 7x^3+12x^2-10x-12 \\ \underline{7x^3+14x^2} \\ -2x^2-10x \\ \underline{-2x^2-4x} \\ -6x-12 \\ \underline{-6x-12} \\ \emptyset \end{array}} \end{array}$$

$$\begin{array}{r} \textcircled{11} \quad x+1 \overline{) \begin{array}{r} x^2+5x+6 \\ x^3+6x^2+11x+16 \\ \underline{x^3+x^2} \\ 5x^2+11x \\ \underline{5x^2+5x} \\ 6x+16 \\ \underline{6x+6} \\ 10 \end{array}} \end{array}$$

$$\begin{array}{r} \textcircled{12} \quad x-3 \overline{) \begin{array}{r} x^2-8x+7 \\ x^3-11x^2+31x-17 \\ \underline{x^3-3x^2} \\ -8x^2+31x \\ \underline{-8x^2+24x} \\ 7x-17 \\ \underline{7x-21} \\ 4 \end{array}} \end{array}$$

Solution:  $x^2+5x+6 + \frac{10}{x+1}$

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

$$\begin{array}{r} x^2 + 4x + 9 \\ \textcircled{13} \ x - 2 \overline{) x^3 + 2x^2 + x - 13} \\ \underline{x^3 - 2x^2} \phantom{+ x - 13} \\ 4x^2 + x \phantom{- 13} \\ \underline{4x^2 - 8x} \phantom{- 13} \\ 9x - 13 \\ \underline{9x - 18} \\ 5 \end{array}$$

Solution:  $x^2 + 4x + 9 + \frac{5}{x-2}$

$$\begin{array}{r} x^2 + 5x + 3 \\ \textcircled{14} \ x - 7 \overline{) x^3 - 2x^2 - 32x - 17} \\ \underline{x^3 - 7x^2} \phantom{- 32x - 17} \\ 5x^2 - 32x \phantom{- 17} \\ \underline{5x^2 - 35x} \phantom{- 17} \\ 3x - 17 \\ \underline{3x - 21} \\ 4 \end{array}$$

Solution:  $x^2 + 5x + 3 + \frac{4}{x-7}$

$$\begin{array}{r} x^2 - 9x + 4 \\ \textcircled{15} \ x + 5 \overline{) x^3 - 4x^2 - 41x + 24} \\ \underline{x^3 + 5x^2} \phantom{- 41x + 24} \\ -9x^2 - 41x \phantom{+ 24} \\ \underline{-9x^2 - 45x} \phantom{+ 24} \\ 4x + 24 \\ \underline{4x + 20} \\ 4 \end{array}$$

Solution:  $x^2 - 9x + 4 + \frac{4}{x+5}$

$$\begin{array}{r} x^2 + x - 3 \\ \textcircled{16} \ x + 10 \overline{) x^3 + 11x^2 + 7x - 37} \\ \underline{x^3 + 10x^2} \phantom{+ 7x - 37} \\ 1x^2 + 7x \phantom{- 37} \\ \underline{x^2 + 10x} \phantom{- 37} \\ -3x - 37 \\ \underline{-3x - 30} \\ -7 \end{array}$$

Solution:  $x^2 + x - 3 - \frac{7}{x+10}$

$$\begin{array}{r} x^4 + 3x^3 + 3x^2 + 5x \\ \textcircled{17} \ x + 2 \overline{) x^5 + 5x^4 + 9x^3 + 11x^2 + 12x + 13} \\ \underline{x^5 + 2x^4} \phantom{+ 9x^3 + 11x^2 + 12x + 13} \\ 3x^4 + 9x^3 \phantom{+ 11x^2 + 12x + 13} \\ \underline{3x^4 + 6x^3} \phantom{+ 11x^2 + 12x + 13} \\ 3x^3 + 11x^2 \phantom{+ 12x + 13} \\ \underline{3x^3 + 6x^2} \phantom{+ 12x + 13} \\ 5x^2 + 12x \phantom{+ 13} \\ \underline{5x^2 + 10x} \phantom{+ 13} \\ 2x \phantom{+ 13} \end{array}$$

$$\begin{array}{r}
 \textcircled{18} \quad x+1 \overline{) \begin{array}{l} x^2 - x + 2 \\ x^3 + x + 2 \\ \underline{x^3 + x^2} \\ -x^2 + x \\ \underline{-x^2 - x} \\ 2x + 2 \\ \underline{2x + 2} \\ \emptyset \end{array} }
 \end{array}$$

$$\begin{array}{r}
 \textcircled{19} \quad x-6 \overline{) \begin{array}{l} 4x^2 + 14x + 84 \\ 4x^3 - 10x^2 - 504 \\ \underline{4x^3 - 24x^2} \\ 14x^2 - 504 \\ \underline{14x^2 - 84x} \\ +84x - 504 \\ \underline{84x - 504} \\ \emptyset \end{array} }
 \end{array}$$

$$\begin{array}{r}
 \textcircled{20} \quad x+2 \overline{) \begin{array}{l} 2x^2 - 4x + 5 \\ 2x^3 - 3x + 10 \\ \underline{2x^3 + 4x^2} \\ -4x^2 - 3x \\ \underline{-4x^2 - 8x} \\ 5x + 10 \\ \underline{5x + 10} \\ \emptyset \end{array} }
 \end{array}$$

$$\begin{array}{r}
 \textcircled{21} \quad x-4 \overline{) \begin{array}{l} 5x^2 + 19x + 96 \\ 5x^3 - x^2 - 304 \\ \underline{5x^3 - 20x^2} \\ 19x^2 - 304 \\ \underline{19x^2 - 76x} \\ 76x - 304 \\ \underline{76x - 304} \\ \emptyset \end{array} }
 \end{array}$$

$$\begin{array}{r}
 \textcircled{22} \quad x-3 \overline{) \begin{array}{l} x^2 - 9x - 27 \\ x^3 - 12x^2 + 81 \\ \underline{x^3 - 3x^2} \\ -9x^2 + 81 \\ \underline{-9x^2 + 27x} \\ -27x + 81 \\ \underline{-27x - 81} \\ \emptyset \end{array} }
 \end{array}$$

$$\begin{array}{r}
 \textcircled{23} \quad x^2-5 \overline{) \begin{array}{l} x \\ x^3 - 5x \\ \underline{x^2 - 5x} \\ \emptyset \end{array} }
 \end{array}$$