

Synthetic Division Homework

Complete the following problems. Make sure to show your work to receive credit.

1)
$$\frac{3x^3 - 2x^2 - 7x + 6}{x + 1}$$

$$\begin{array}{r|rrrr} -1 & 3 & -2 & -7 & 6 \\ & \downarrow & -3 & 5 & 2 \\ \hline & 3 & -5 & -2 & \textcircled{8} \end{array}$$

$$3x^2 - 5x - 2 + \frac{8}{x+1}$$

2)
$$\frac{2x^3 - 5x - 7}{x - 2}$$

$$\begin{array}{r|rrrr} 2 & 2 & 0 & -5 & -7 \\ & \downarrow & 4 & 8 & 6 \\ \hline & 2 & 4 & 3 & \textcircled{-1} \end{array}$$

$$2x^2 + 4x + 3 - \frac{1}{x-2}$$

3)
$$\frac{2x^3 + 7x^2 - 6x - 8}{x + 4}$$

$$\begin{array}{r|rrrr} -4 & 2 & 7 & -6 & -8 \\ & \downarrow & -8 & 4 & 8 \\ \hline & 2 & -1 & -2 & \textcircled{0} \end{array}$$

$$2x^2 - x - 2$$

4)
$$\frac{5x^3 - 3x^2 - 6}{x - 1}$$

$$\begin{array}{r|rrrr} 1 & 5 & -3 & 0 & -6 \\ & \downarrow & 5 & 2 & 2 \\ \hline & 5 & 2 & 2 & \textcircled{-4} \end{array}$$

$$5x^2 + 2x + 2 - \frac{4}{x-1}$$

5)
$$\frac{3x^3 - 5x^2 + 4x + 2}{3x + 1}$$

$$\begin{array}{r|rrrr} -\frac{1}{3} & 3 & -5 & 4 & 2 \\ & \downarrow & -1 & 2 & -\frac{2}{3} \\ \hline & 3 & -6 & 6 & \textcircled{0} \end{array}$$

$$\frac{3x^2}{3} - \frac{6x}{3} + \frac{6}{3}$$

$$x^2 - 2x + 2$$

6)
$$\frac{x^3 + 5}{x + 2}$$

$$\begin{array}{r|rrrr} -2 & 1 & 0 & 0 & 5 \\ & \downarrow & -2 & 4 & -8 \\ \hline & 1 & -2 & 4 & \textcircled{-3} \end{array}$$

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