

Divide $f(x)$ by $d(x)$ by using long division, and write a summary statement in polynomial form and fraction form.

$$f(x) = x^3 + 10x^2 + 13x + 36 \quad d(x) = x + 9$$

$$\begin{array}{r}
 x^2 + x + 4 \\
 \hline
 x + 9 \overline{) x^3 + 10x^2 + 13x + 36} \\
 \underline{- x^3 + 9x^2} \\
 1x^2 + 13x \\
 \underline{- x^2 + 9x} \\
 4x + 36 \\
 \underline{- 4x + 36} \\
 0
 \end{array}
 \qquad
 \begin{array}{l}
 x^2 + x + 4
 \end{array}$$

Divide $f(x)$ by $d(x)$ by using long division, and write a summary statement in polynomial form and fraction form.

$$f(x) = 3x^2 + 18x - 46 \quad d(x) = 3x + 6$$

Divide $f(x)$ by $d(x)$ by using long division, and write a summary statement in polynomial form and fraction form.

$$f(x) = 15x^3 + 37x^2 + 53x + 55 \quad d(x) = 3x + 5$$

$$\begin{array}{r}
 5x^2 + 4x + 11 \\
 \hline
 3x + 5 \overline{) 15x^3 + 37x^2 + 53x + 55} \\
 \underline{-15x^3 + 25x^2} \\
 12x^2 + 53x \\
 \underline{-12x^2 + 20x} \\
 33x + 55 \\
 \underline{-33x + 55} \\
 0
 \end{array}$$

$$5x^2 + 4x + 11$$

Divide $f(x)$ by $d(x)$ by using long division, and write a summary statement in polynomial form and fraction form.

$$f(x) = 4x^3 - 3x^2 + x + 1 \quad d(x) = x^2 + x + 1$$

$$\begin{array}{r}
 4x - 7 \\
 \hline
 x^2 + x + 1 \overline{) 4x^3 - 3x^2 + x + 1} \\
 \underline{-4x^3 + 4x^2 + 4x} \\
 -7x^2 - 3x + 1 \\
 (-) \underline{-7x^2 - 7x - 7} \\
 4x + 8
 \end{array}$$

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

Divide $f(x)$ by $d(x)$ by using long division, and write a summary statement in polynomial form and fraction form.

$$f(x) = -3x^4 - 2x - 1 \quad d(x) = x - 1$$

$$\begin{array}{r}
 \overline{-3x^3 - 3x^2 - 3x - 5} \\
 x-1 \overline{) -3x^4 + 0x^3 + 0x^2 - 2x - 1} \\
 (-) \underline{-3x^4 + 3x^3} \\
 + 3x^3 + 0x^2 \\
 (-) \underline{-3x^3 + 3x^2} \\
 - 3x^2 - 2x \\
 (-) \underline{-3x^2 + 3x} \\
 - 5x - 1 \\
 (-) \underline{-5x + 5} \\
 - 6
 \end{array}$$

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

Divide $f(x)$ by $d(x)$ by using synthetic division, and write a summary statement in polynomial form and fraction form.

$$f(x) = x^3 + 13x^2 + 42x + 54 \quad d(x) = x + 9$$

$$\begin{array}{r|rrrr} -9 & 1 & 13 & 42 & 54 \\ & & -9 & -36 & -54 \\ \hline & 1 & 4 & 6 & 0 \end{array}$$

$$x^2 + 4x + 6$$

Divide $f(x)$ by $d(x)$ by using synthetic division, and write a summary statement in polynomial form and fraction form.

$$2x + 3 = 0$$
$$x = -\frac{3}{2}$$

$$f(x) = 2x^3 + 3x^2 - 2x - 3 \quad d(x) = 2x + 3$$

$$\begin{array}{r|rrrr} -\frac{3}{2} & 2 & 3 & -2 & -3 \\ & & -3 & 0 & 3 \\ \hline & 2 & 0 & -2 & 0 \end{array}$$

$$\frac{2x^2 - 2}{2} = x^2 - 1$$

Divide $f(x)$ by $d(x)$ by using synthetic division, and write a summary statement in polynomial form and fraction form.

$$f(x) = 2x^3 - 2x^2 + 7x \quad d(x) = 2x - 2$$

Divide $f(x)$ by $d(x)$ by using synthetic division, and write a summary statement in polynomial form and fraction form.

$$x = 2$$

$$f(x) = 3x^2 - 14 \quad d(x) = x - 2$$

$$\begin{array}{r|rrr} 2 & 3 & 0 & -14 \\ & & 6 & 12 \\ \hline & 3 & 6 & -2 \end{array}$$

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

$$x^4 - 5 \div x - 1$$

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

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