

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

2. $\frac{x^2 - 4}{x - 2}$

3. $\frac{x^2 + 2x + 1}{x + 1}$

omit
4. $\frac{3x^5 - 12x^4 - 13x^2 + 26x}{3x^2 + x - 9}$

5. $\frac{x^3 - 4x^2 + x + 6}{x - 2}$

6. $\frac{x^3 - 3x^2 - 11x + 6}{x^2 + 2x - 1}$

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

8. $\frac{x^4 + 2x^2 + 8x + 5}{x^2 + 2x + 1}$

9. $\frac{x^5 + 1}{x + 1}$

10. $\frac{x^4 + 4x^3 + 6x^2 + 4x + 1}{x + 1}$

Polynomial Division Key

$$1. \quad x-3 \overline{) x^2 - x + 6}$$

$$\begin{array}{r} x+2 \\ -(x^2 - 3x) \\ \hline 2x+6 \\ -(2x+6) \\ \hline 0 \end{array}$$

$$\boxed{x+2 + \frac{12}{x-3}}$$


$$2. \quad x-2 \overline{) x^2 + 0x - 4}$$

$$\begin{array}{r} x+2 \\ -(x^2 - 2x) \\ \hline 2x-4 \\ -(2x+4) \\ \hline 0 \end{array}$$

$$\boxed{x+2}$$

OR $x^2 - 4$

$$\begin{array}{r} x-2 \\ \hline (x-2)(x+2) \\ \hline x-2 \end{array}$$

$$= x+2$$



$$3. \quad x+1 \overline{) x^2 + 2x + 1}$$

$$\begin{array}{r} x+1 \\ -(x^2 + x) \\ \hline x+1 \\ -(x+1) \\ \hline 0 \end{array}$$

$$\boxed{x+1}$$

OR $\frac{x^2 + 2x + 1}{x+1}$

$$= \frac{(x+1)(x+1)}{x+1}$$

$$= x+1$$


$$5. \quad x-2 \overline{) x^3 - 4x^2 + x + 6}$$

$$\begin{array}{r} x^2 - 2x - 3 \\ -(x^3 + 2x^2) \\ \hline -2x^2 + x \\ -(-2x^2 + 4x) \\ \hline -3x + 6 \\ -(-3x + 6) \\ \hline 0 \end{array}$$

$$\boxed{x^2 - 2x - 3}$$

$$6. \quad x^2 + 2x - 1 \overline{) x^3 - 3x^2 - 11x + 5}$$

$$\begin{array}{r} x-5 \\ -(x^3 + 2x^2 + x) \\ \hline -5x^2 - 10x + 5 \\ +5x^2 + 10x + 5 \\ \hline 0 \end{array}$$

$$\boxed{x-5}$$

$$7. \quad 2x^2 + 2x + 3 \overline{) 2x^3 - 6x^2 + 7x - 6}$$

$$\begin{array}{r} x-4 \\ -(2x^3 + 2x^2 + 3x) \\ \hline -8x^2 - 10x - 6 \\ +8x^2 + 8x + 12 \\ \hline -2x + 6 \end{array}$$

$$\boxed{x-4 + \frac{-2x+6}{2x^2+2x+3}}$$

$$\begin{array}{r}
 8. \quad X^2+2X+1 \overline{) X^4+0X^3+2X^2+8X+5} \\
 \underline{-X^4+2X^3+X^2} \\
 -2X^3+X^2+8X \\
 \underline{+2X^3+4X^2+2X} \\
 5X^2+10X+5 \\
 \underline{-(5X^2+10X+5)} \\
 0
 \end{array}$$

$$X^2-2X+5$$

$$\begin{array}{r}
 9. \quad X+1 \overline{) X^5+0X^4+0X^3+0X^2+0X+1} \\
 \underline{-X^5+X^4} \\
 -1X^4+0X^3 \\
 \underline{+X^4+X^3} \\
 1X^3+0X^2 \\
 \underline{-X^3+X^2} \\
 -X^2+0X \\
 \underline{+X^2+X} \\
 X+1 \\
 \underline{X+1} \\
 0
 \end{array}$$

$$X^4-X^3+X^2-X+1$$

$$\begin{array}{r}
 10. \quad X+1 \overline{) X^4+4X^3+6X^2+4X+1} \\
 \underline{-X^4+X^3} \\
 3X^3+6X^2 \\
 \underline{-3X^3+3X^2} \\
 3X^2+4X \\
 \underline{-3X^2+3X} \\
 X+1 \\
 \underline{-X+1} \\
 0
 \end{array}$$

$$X^3+3X^2+3X+1$$