

Long ÷

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

depressed $2\sqrt{15} = 14$

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

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

Aug 31-8:39 AM

②

$$\begin{array}{r} 3x^4 + 4x^3 + 8x^2 + 17x + 30 \\ \overline{(x-2) } \\ \underline{-3x^5 + 6x^4} \\ 4x^4 + 0x^3 + x^2 - 4x + 12 \\ \underline{-4x^4 + 8x^3} \\ 8x^3 + x^2 - 4x + 12 \\ \underline{-8x^3 + 16x^2} \\ 17x^2 - 4x + 12 \\ \underline{-17x^2 + 34x} \\ 30x + 12 \\ \underline{-30x + 60} \\ 72 \end{array}$$

Aug 31-8:52 AM

$$(3x^4 + 4x^3 + 8x^2 + 17x + 30) \overline{) x-2}$$

Aug 31-9:00 AM

③

$$\begin{array}{r} (x^2 - x - 6) \overline{) x^2 + x - 6} \\ \underline{-x^4 + x^3 + 6x^2} \\ -x^3 - 7x^2 + 0x - 36 \\ \underline{+x^3 + x^2 - 6x} \\ -6x^2 - 6x - 36 \\ \underline{+6x^2 + 6x - 36} \\ -72 \end{array}$$

Aug 31-9:01 AM

④

$$\begin{array}{r} (5x^2 + 20) \overline{) 5x^4 + 0x^3 + 0x^2 + 8x - 9} \\ \underline{-5x^4} \\ 20x^2 + 8x - 9 \\ \underline{-20x^2} \\ 8x + 71 \end{array}$$

Aug 31-9:21 AM

8. $x-5$

$$\begin{array}{r} 5 \overline{) 2 } \\ \underline{ 10 } \\ 10 \\ \underline{ 10 } \\ 0 \\ 0 \\ 0 \end{array}$$

$\rightarrow 2 $ remainder

$(2x^2 + 10x + 5) \overline{) x-5}$

Aug 31-9:38 AM

Synthetic \div * only use when $x \neq a$

⑤ $-1 \mid 2 \quad 2 \quad 1 \quad -1 \quad -1$ $\overline{) x+1}$
 $\downarrow \quad -2 \quad 0 \quad -1 \quad 2$
 depressed $\rightarrow 2x^3 \quad 0x^2 \quad 1x \quad -2 \mid 1$ remainder
 $(2x^3 + x - 2) \overline{) x+1}$

Aug 31-9:24 AM

⑥ $1 \mid 1 \quad 2 \quad -5 \quad 3 \quad -1$ $\overline{) x-1=0}$
 $\downarrow \quad 1 \quad 3 \quad -2 \quad 1$ $\overline{) x=1}$
 $\rightarrow 1 \quad 3 \quad -2 \quad 1 \mid 0$ remainder
 $x^3 + 3x^2 - 2x + 1$

Aug 31-9:32 AM