

$$\begin{array}{r}
 \phantom{0}x^3 : x = \\
 \hline
 (x^3 - x^2 - 14x + 24) : (x + 4) = x^2 - 5x + 6 \\
 \hline
 -(x^3 + 4x^2) \\
 \hline
 -5x^2 - 14x + 24 \quad \left. \begin{array}{l} \text{orange} \\ \text{green} \end{array} \right\} (x^3 - x^2) - (x^3 + 4x^2) = -5x^2 - 14x + 24 \\
 \hline
 -(-5x^2 - 20x) \\
 \hline
 6x + 24 \quad \left. \begin{array}{l} \text{orange} \\ \text{green} \end{array} \right\} (-5x^2 - 14x) - (-5x^2 - 20x) = 6x + 24 \\
 \hline
 -(6x + 24) \\
 \hline
 0 \quad \left. \begin{array}{l} \text{orange} \\ \text{green} \end{array} \right\} (6x + 24) - (6x + 24) = 0
 \end{array}$$