



6.3 Dividing Polynomials

Divisor → 6

$$\begin{array}{r} 4 \leftarrow \text{Quotient} \\ 6 \overline{) 24} \\ \underline{24} \\ 0 \end{array}$$

↑ Dividend

$$\begin{array}{r} 8 \frac{2}{5} \\ 5 \overline{) 42} \\ \underline{-40} \\ 2 \end{array}$$

$$\begin{array}{r} 2x \\ x \overline{) 2x^2} \\ \underline{-2x^2} \\ 0 \end{array}$$

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Ex1 Divide $x^2 + 3x - 12$ by $x - 3$

$$\begin{array}{r}
 x + 6 + \frac{6}{x-3} \\
 x-3 \overline{) x^2 + 3x - 12} \\
 \underline{-x^2 + 3x} \\
 6x - 12 \\
 \underline{-6x + 18} \\
 6
 \end{array}$$

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Ex2 Divide $x^2 - 3x + 1$ by $x - 4$

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

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Ex 3 Determine wheter $x+4$ is a factor of each
↑ means

① $x^2 + 6x + 8$

$$\begin{array}{r}
 \overline{) x^2 + 6x + 8} \\
 \underline{-x^2 + 4x} \\
 2x + 8 \\
 \underline{-2x + 8} \\
 0
 \end{array}$$

$x+2$ ✓

② $x^3 + 3x^2 - 6x - 7$

$$\begin{array}{r}
 \overline{) x^3 + 3x^2 - 6x - 7} \\
 \underline{-x^3 + 4x^2} \\
 -x^2 - 6x \\
 \underline{+x^2 + 4x} \\
 -2x - 7 \\
 \underline{+2x + 8} \\
 1
 \end{array}$$

NOT

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