

4.

$$\begin{array}{r}
 \overline{2x^2 + 5x + 2} \\
 x-4 \overline{) 2x^3 - 3x^2 - 18x - 8} \\
 \underline{-2x^3 + 8x} \\
 5x^2 - 18x \\
 \underline{-5x^2 + 20x} \\
 2x - 8 \\
 \underline{-2x + 8} \\
 0
 \end{array}$$

Yes!

Mar 4-9:28 AM

$$\begin{array}{r}
 \overline{x^2 + 4x + 3} \\
 x-4 \overline{) x^3 + 0x^2 - 13x - 12} \\
 \underline{-x^3 + 4x^2} \\
 4x^2 - 13x \\
 \underline{-4x^2 + 16x} \\
 3x - 12 \\
 \underline{-3x + 12} \\
 0
 \end{array}$$

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Synthetic Division

Ex 4 Use synthetic division to divide $3x^3 - 4x^2 + 2x - 1$ by $x + 1$

old way $x + 1 \overline{) 3x^3 - 4x^2 + 2x - 1}$

new $-1 \mid \begin{array}{r} 3 \quad -4 \quad 2 \quad -1 \\ \underline{-3 \quad 7 \quad -9} \\ 3 \quad -7 \quad 9 \quad -10 \end{array}$

$$3x^2 - 7x + 9 + \frac{-10}{x+1}$$

Jan 6-12:33 PM

Ex 6 Evaluate a polynomial by Synthetic division

Find $P(-4)$ for $P(x) = x^4 - 5x^2 + 4x + 12$

$$-4 \mid \begin{array}{r} 1 \quad 0 \quad -5 \quad 4 \quad 12 \\ \underline{-4 \quad 16 \quad -44 \quad 160} \\ 1 \quad -4 \quad 11 \quad -40 \quad \textcircled{172} \end{array}$$

$P(-4) = 172$

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$$\begin{array}{r} \cancel{1-4} \\ 13-18 \\ 26, 27 \end{array}$$

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