5.4 Dividing Polynomials

Long Division

\[
\frac{2x + 1}{6x^2 + 7x + 2}
\]

5.4 Dividing Polynomials

Use Polynomial Division to divide \(4x^2 + 23x - 16\) by \(x + 5\)

\[
x + 5 \frac{4x^2 + 23x - 16}{x + 5}
\]

5.4 Dividing Polynomials

Use Polynomial Division to divide \(3x^2 - 29x + 56\) by \(x - 7\)

\[
x - 7 \frac{3x^2 - 29x + 56}{x - 7}
\]

5.4 Dividing Polynomials

Checking Factors:
Is \(x^2 + 1\) a factor of \(P(x) = 3x^4 - 4x^3 + 12x^2 + 5\)

\[
x^2 + 0x + 1 \frac{3x^4 - 4x^3 + 12x^2 + 0x + 5}{x^2 + 0x + 1}
\]

Checking Factors:
Is \(x - 2\) a factor of \(P(x) = x^5 - 32\)

\[
x - 2 \frac{x^5 + 0x^4 + 0x^3 + 0x^2 + 0x - 32}{x - 2}
\]

Checking Factors:
Is \(x^4 - 1\) a factor of \(x^5 + 5x^4 - x - 5\)?

\[
x^4 + 0x^3 + 0x^2 + 0x - 1 \frac{x^5 + 5x^4 + 0x^3 + 0x^2 - x - 5}{x^4 + 0x^3 + 0x^2 + 0x - 1}
\]

If so, Write \(P(x)\) as a product of two factors
Homework:

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