

Name
Date
Course

Polynomials (Part II): Long Division (Homework)

First write
the dividend
and/or
the divisor
in descending
order of
powers.

Perform the following division.

① $(x^3 + 5x^2 + 2x - 8) \div (x + 4)$

② $(3x^4 + 4x^3 - 9x^2 - 18x - 8) \div (3x^2 - 2x - 8)$

③ $(-x^4 - 6x^3 - 9x^2 + 4x + 12) \div (x - 1)$

④ $(x^2 - x^3 + 5x^4 - 2x + 7) \div (4x + 3 + x^2)$

⑤ $(-8x^2 + 4x^3 - x + 10) \div (x - 2)$

⑥ $(2x^3 + 9x^2 + x - 1) \div (x^2 + 1)$

⑦ $(-6x^5 - 5x^3 - 2x^4 + x + 8x^2 + 2) \div (x + 2x^3)$

⑧ $(x^5 - 2x^3 + 8) \div (x + 2)$

⑨ $(3x^4 + 9x - 17) \div (x^2 + 3x - 10)$

⑩ $(8x^4 + 2x^3 + 5x + 15) \div (x^2 + 1)$

⑪ $(2x^5 - 2x + 3x^4 - 3) \div (3 + 2x)$

Answers

- ① $x^2 + x - 2$
- ② $x^2 + 2x + 1$
- ③ $-x^3 - 7x^2 - 16x - 12$
- ④ $5x^2 - 21x + 70 + \frac{-219x - 203}{x^2 + 4x + 3}$ or $5x^2 - 21x + 70 - \frac{219x + 203}{x^2 + 4x + 3}$
- ⑤ $4x^2 - 1 + \frac{8}{x-2}$
- ⑥ $2x + 9 + \frac{-x-10}{x^2+1}$ or $2x + 9 - \frac{x+10}{x^2+1}$
- ⑦ $-3x^2 - x - 1 + \frac{9x^2 + 2x + 2}{2x^3 + x}$
- ⑧ $x^4 - 2x^3 + 2x^2 - 4x + 8 - \frac{8}{x+2}$
- ⑨ $3x^2 - 9x + 57 + \frac{-252x + 553}{x^2 + 3x - 10}$
- ⑩ $8x^2 + 2x - 8 + \frac{3x + 23}{x^2 + 1}$
- ⑪ $x^4 - 1$