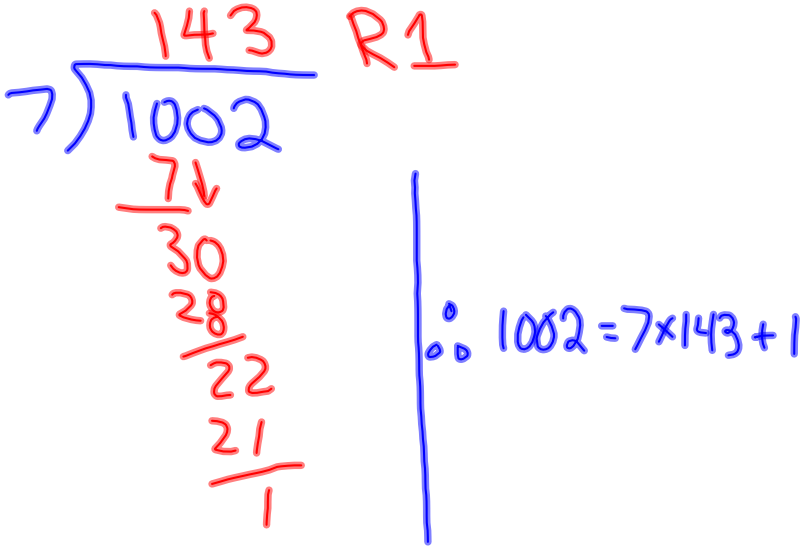
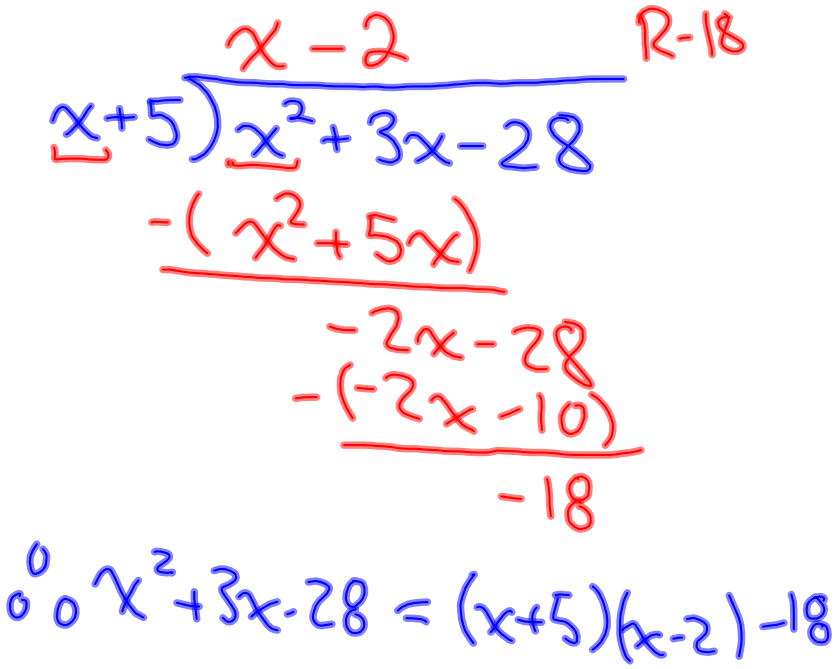
Dividing Polynomials

Example 1: Divide, using long division: $7\overline{)1002}$



Example 2: Divide $x^2 + 3x - 28$ by $x + 5$.



$\therefore x^2 + 3x - 28 = (x+5)(x-2) - 18$

Example 3: Divide $x^3 - 7x + 6$ by $x + 1$.

$x^2 - 1x - 6$ R12

$x+1 \overline{)\, x^3 + 0x^2 - 7x + 6}$

$-(x^3 + x^2)$

$-1x^2 - 7x$

$-(-1x^2 - 1x)$

$-6x + 6$

$-(-6x - 6)$

12

$x^3 - 7x + 6$

$= (x^2 - x - 6)(x+1) + 12$

Example 4: Divide $4x^3 - 4x^2 - 3x + 5$ by $2x - 1$.

$2x^2 - x - 2$ R 3

$2x-1 \overline{)\, 4x^3 - 4x^2 - 3x + 5}$

$-(4x^3 - 2x^2)$

$-2x^2 - 3x$

$-(-2x^2 + x)$

$-4x + 5$

$-(-4x + 2)$

3

$4x^3 - 4x^2 - 3x + 5$

$= (2x-1)(2x^2 - x - 2) + 3$

Homework: Handouts
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