$$5x^2 - 2xy - 16y^2$$

$$= 5x^2 - 2yx - 16y^2 =$$

$$= 5x^2 + 8yx - 10yx - 16y^2 =$$

$$= x(5x + 8y) - 2y(5x + 8y) =$$

$$= (5x + 8y)(x - 2y)$$

$s = -2y$

$p = -80y^2$

$y \cdot 80y$

$2y \cdot 40y$

$4y \cdot 10y$

$5y \cdot 16y$

$8y \cdot 10y$

$8y + (-10y)$

$$4a^2 - 11ab + 7b^2$$

$$= 4a^2 - 11ba + 7b^2 =$$

$$= 4a^2 - 4ba - 7ba + 7b^2 =$$

$$= 4a(a-b) - 7b(a-b) =$$

$$= \underline{(a-b)(4a-7b)}$$

$S = -11b$

$P = 28b^2$

$b \cdot 28b$

$2b \cdot 14b$

$4b \cdot 7b$

$4b ; -7b$

$$x^4 + 4x^2 - 45 =$$

$$= t^2 + 4t - 45 =$$

$$= (t + a)(t + b) =$$

$$= (t - 5)(t + 9) =$$

$$= (x^2 - 5)(x^2 + 9) =$$

$$= (x + \sqrt{5})(x - \sqrt{5})(x^2 + 9)$$

$$x^2 = t$$

$$p = -45$$

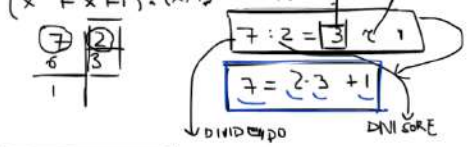
$$s = 4$$

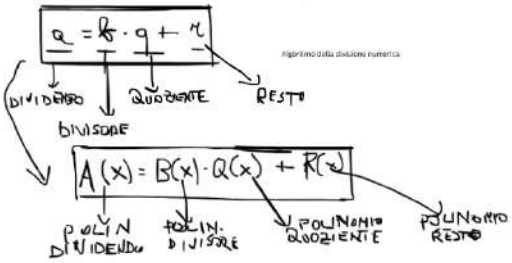
$$a = -5 \quad b = 9$$

1. -45
3. -15
5. -9

Divisione polinomiale

$(x^2+x+1) : (x+1) = ?!?$ quoziente resto





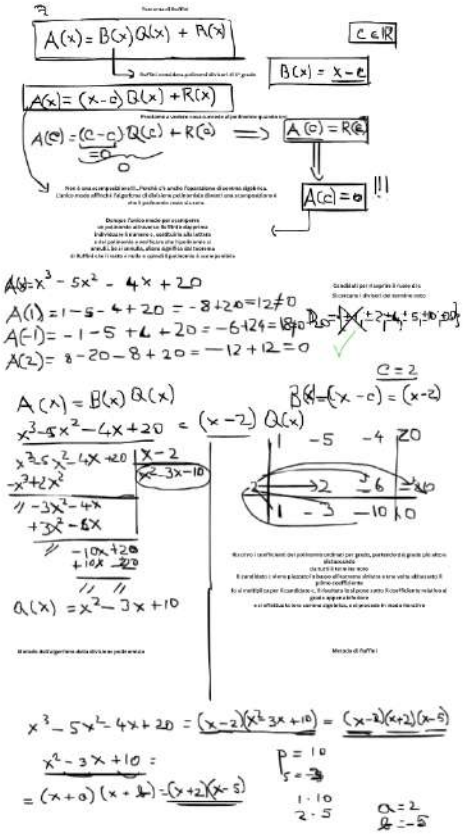
Algoritmo della divisione numerica

Algoritmo della divisione polinomiale

Sempre utilizzabile

$$\begin{array}{r|l} 6a^2+5a+1 & a+1 \\ -6a^2-6a & 6a-1 \\ \hline // \quad -a+1 & \\ \quad +a+1 & \\ \hline // \quad 2 & \end{array}$$

$$6a^2+5a+1 = (a+1)(6a-1)+2 =$$
$$= 6a^2 - a + 6a - 1 + 2 =$$
$$= 6a^2 + 5a + 1 \quad \checkmark$$


Teorema di Ruffini
A(x) = B(x) Q(x) + R(x)
c ∈ ℝ
B(x) = x − c
A(x) = (x − c) Q(x) + R(x)
A(c) = (c − c) Q(c) + R(c) ⟹ A(c) = R(c)
=0
0
A(c) = 0
!!!
A(x) = x³ − 5x² − 4x + 20
A(0) = 20
A(1) = 1 − 5 − 4 + 20 = −8 + 20 = 12 ≠ 0
A(−1) = −1 − 5 + 4 + 20 = −6 + 24 = 18 ≠ 0
A(2) = 8 − 20 − 8 + 20 = −12 + 12 = 0
c = 2
A(x) = B(x) Q(x)
B(x) = (x − c) = (x − 2)
x³ − 5x² − 4x + 20 = (x − 2) Q(x)
x³ − 5x² − 4x + 20 | x − 2
−x³ + 2x²
−3x² − 4x
+3x² − 6x
−10x + 20
+10x − 20
Q(x) = x² − 3x + 10
1 −5 −4 20
2 2 −6 −20
1 −3 −10 0
x³ − 5x² − 4x + 20 = (x − 2)(x² − 3x + 10) = (x − 2)(x + 2)(x − 5)
x² − 3x + 10 =
= (x + a)(x + b) = (x + 2)(x − 5)
P = 10
S = −3
1 · 10
2 · 5
a = 2
b = −5

$A(a) = 3a^3 + 2a^2 - 4a - 3$

$3 \neq 1$

$D_3 = \{\pm 1; \pm 3\}$ TERM. NOTO

$D_3 = \{\pm 1; \pm 3\}$ GRADO DEL POLINOMIO

$A(1) = 3 + 2 - 4 - 3 = 5 - 7 = -2 \neq 0$

$A(-1) = -3 + 2 + 4 - 3 = 3 - 3 = 0$

$C = \frac{D_3}{D_3} = \left\{\pm 1; \pm \frac{1}{3}; \pm 3\right\}$

$c = -1$

$B(a) = a - c = a - (-1) = (a + 1)$

	3	2	−4	−3
−1		−3	1	3
	3	−1	−3	0

$3a^3 + 2a^2 - 4a - 3 = \boxed{(a+2)(3a^2 - a - 3)}$

$3a^2 - a - 3$

$p = -9$

$S = -1$

$1 \cdot 9$

$3 \cdot 3$

Non è scomponibile in Q

Nei reali, in R, posso usare il discriminante di un polinomio di secondo grado (da vedere in seguito...)!