verifica A del 7/4/2016

1) A $\quad (4m^4 - 2m^3 + 3m + 2) : (2m^2 + 1)$

$$
\begin{array}{rrrrr|l}
4m^4 & -2m^3 & +0 & +3m & +2 & 2m^2+1 \\
\cline{6-6}
-4m^4 & & -2m^2 & & & 2m^2 - m - 1 \\
\hline
// & -2m^3 & -2m^2 & +3m & & \\
 & +2m^3 & & +m & & \\
\hline
 & // & -2m^2 & +4m & +2 & \\
 & & 2m^2 & & +1 & \\
\hline
 & & // & 4m & +3 &
\end{array}
$$

$Q: 2m^2 - m - 1 \qquad R: 4m + 3$

Prova

$(2m^2 - m - 1)(2m^2 + 1) + 4m + 3 = 4m^4 + \cancel{2m^2} - 2m^3 - m - \cancel{2m^2} - 1 + 4m + 3 =$

$= 4m^4 - 2m^3 + 3m + 2 \quad$ ok

1) B $(b^4 - 2b^3 - 3b - 1) : (b-1)$

$$
\begin{array}{c|cccc|c}
 & 1 & -2 & 0 & -3 & -1 \\
1 & & 1 & -1 & -1 & -4 \\
\hline
 & 1 & -1 & -1 & -4 & -5 \\
 & b^3 & b^2 & b^1 & b^0 &
\end{array}
$$

$Q: b^3 - b^2 - b - 4$ $\quad R: -5$

Prove

$$(b^3 - b^2 - b - 4)(b-1) - 5 = b^4 - b^3 - b^3 + \cancel{b^2} - \cancel{b^2} + b \overset{-4b}{\vee} + 4 - 5 =$$

$$= b^4 - 2b^3 + 3b - 1$$

ok

2) A $\quad (2t^3+t^2-1):(2t^2-\frac{1}{3})$

$$\begin{array}{rrrr|l} 2t^3 & +t^2 & +0 & -1 & 2t^2-\frac{1}{3} \\ \cline{5-5} -2t^3 & & +\frac{1}{3}t & & t+\frac{1}{2} \\ \cline{1-4} // & t^2 & \frac{1}{3}t & -1 & \\ & -t^2 & & +\frac{1}{6} & \\ \cline{2-4} & // & \frac{1}{3}t & -\frac{5}{6} & \end{array}$$

$Q: t+\frac{1}{2}$ $\qquad$ $R: \frac{1}{3}t-\frac{5}{6}$

Prova.

$$\left(2t^2-\frac{1}{3}\right)\left(t+\frac{1}{2}\right)+\frac{1}{3}t-\frac{5}{6} = 2t^3+t^2\cancel{-\frac{1}{3}t}-\frac{1}{6}\cancel{+\frac{1}{3}t}-\frac{5}{6} =$$

$$= 2t^3+t^2-1$$

ok

2) B $\quad (y^4+2y\ \ -1):(y-\frac{1}{2})$

$$
\begin{array}{c|cccc|c}
 & 1 & 0 & 0 & 2 & -1 \\
\frac{1}{2} & & \frac{1}{2} & \frac{1}{4} & \frac{1}{8} & \frac{17}{16} \\
\hline
 & 1 & \frac{1}{2} & \frac{1}{4} & \frac{17}{8} & \frac{1}{16}
\end{array}
$$

$Q: y^3+\frac{1}{2}y^2+\frac{1}{4}y+\frac{17}{8}$ $\qquad$ $R\ \frac{1}{16}$

Prova

$$\left(y^3+\frac{1}{2}y^2+\frac{1}{4}y+\frac{17}{8}\right)\left(y-\frac{1}{2}\right)+\frac{1}{16}=y^4\cancel{-\frac{1}{2}y^3}\cancel{+\frac{1}{2}y^3}\cancel{-\frac{1}{4}y^2}\cancel{+\frac{1}{4}y^2}-\frac{1}{8}y+$$
$$+\frac{17}{8}y-\frac{17}{16}+\frac{1}{16}=y^4+2y-1$$

OK

3) Scomponi $x^4-5x^3+2x^2+20x-24$

Divisori $\pm 1 \quad \pm 2 \quad \pm 3 \quad \pm 4 \quad \pm 6 \quad \pm 8 \quad \pm 12 \quad \pm 24$

Provo 1

$1-5+2+20-24 \neq 0$

Provo -1

$1+5+2-20-24 \neq 0$

Provo 2

$16-40+8+40-24 = \underline{\underline{0}}$

Divido per $\boxed{(x-2)\,!}$ primo fattore

	1	-5	2	20	-24
2		2	-6	-8	24
	1	-3	-4	12	//

$x^3-3x^2-4x+12$

Provo ancora con 2

$8-12-8+12 = \underline{\underline{0}}$

Divido per $\boxed{(x-2)}$ secondo fattore

$$
\begin{array}{c|ccc|c}
 & 1 & -3 & -4 & 12 \\
2 & & 2 & -2 & -12 \\
\hline
 & 1 & -1 & -6 & //
\end{array}
$$

$$x^2 - x - 6 = (x-3)(x+2)$$ (trinomio notevole)

$$x^4 - 5x^3 + 2x^2 + 20x - 24 = (x-2)^2 (x-3)(x+2)$$

4 Tipologia 1

$$\frac{\dfrac{3x+1}{x^2-4} + \dfrac{2}{2-x}}{\dfrac{3}{4-x^2}} = 2$$

$$\frac{\dfrac{3x+1}{(x+2)(x-2)} - \dfrac{2}{x-2}}{\dfrac{3}{\cancel{(x+2)(\ )}}} = 2$$

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

$$\frac{\dfrac{3x+1-2(x+2)}{(x+2)(x-2)}}{-\cancel{3}\,\dfrac{3}{(x+2)(x-2)}} = 2$$

C.E. $x+2 \neq 0 \quad x \neq -2$

$x-2 \neq 0 \quad x \neq 2$

$$\frac{3x+1-2x-4}{\cancel{(x+2)(x-2)}} \cdot \frac{\cancel{(x+2)(x-2)}}{-3} = 2$$

$$\cancel{3x}\,\cancel{(-3)} \cdot \frac{x-3}{\cancel{-3}} = +2 \cdot (-3)$$

$$x-3=-6 \qquad \boxed{x=-3} \quad \text{Acc.}$$

(4) Tipologia 2 — 7bis

$$\frac{1-\frac{x^2}{x^2+5x+6}}{1-\frac{x^2}{x^2+x-6}}=5$$

$$\frac{1-\frac{x^2}{(x+2)(x+3)}}{1-\frac{x^2}{(x+3)(x-2)}}=5$$

C.E.
$(x+2)\neq 0 \quad x\neq -2$
$(x+3)\neq 0 \quad x\neq -3$

$$\frac{(x+2)(x+3)-x^2}{(x+2)\cancel{(x+3)}}\cdot\frac{\cancel{(x+3)}(x-2)}{(x+3)(x-2)-x^2}=5$$

$$\frac{\cancel{x^2}+5x+6-\cancel{x^2}}{x+2}\cdot\frac{(x-2)}{\cancel{x^2}+x-6-\cancel{x^2}}=5$$

$$\frac{(5x+6)(x-2)}{(x+2)(x-6)}=5$$

C.E. $x-6\neq 0$
$x\neq 6$

$$\frac{(5x+6)(x-2)}{\cancel{(x+2)}\cancel{(x-6)}}=\frac{5(x+2)(x-6)}{\cancel{(x+2)}\cancel{(x-6)}}$$

$$5x^2-10x+6x-12=5(x^2-6x+2x-12)$$

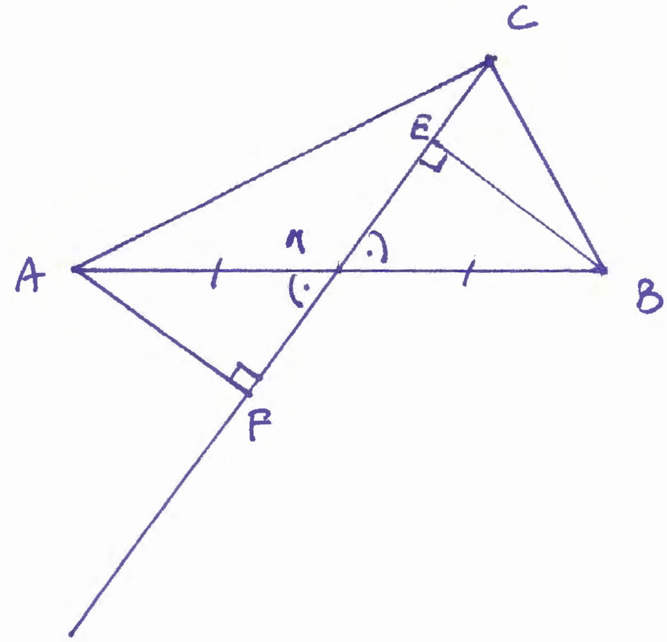
$$\cancel{5x^2}-4x-12=\cancel{5x^2}-20x-60$$

$$-4x+20x=-60+12$$

$$\frac{\cancel{16}x}{\cancel{16}}=\frac{-48}{16} \qquad x=-3$$

NON ACC.

5)



Ip: $\overline{AM} \cong \overline{BM}$

$\overline{BE} \perp CM$

$\overline{AF} \perp CM$

Tesi: $\overline{AF} \cong \overline{BE}$

1) $A\hat{M}F \cong E\hat{M}B$ – Opposti al vertice

2) $A\overset{\triangle}{M}F \cong B\overset{\triangle}{M}E$ – II ~~ca~~ criterio esteso:

$AM \cong MB$ (Ip.); $A\hat{M}F \cong E\hat{M}B$ (1)

$A\hat{F}M \cong M\hat{E}B \cong \frac{\pi}{2}$ (Ip)

3) $\overline{AF} \cong \overline{BE}$ – (2) Q.E.D.

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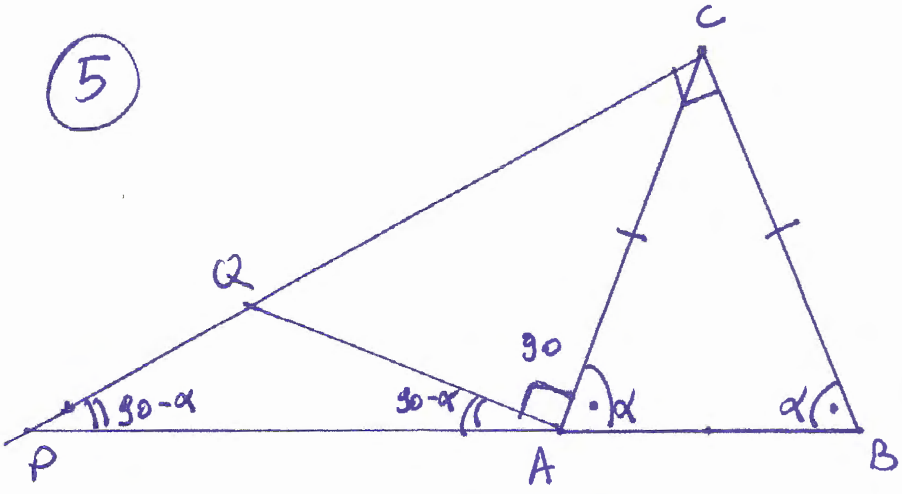

IP: $\overline{AC} \cong \overline{CB}$

$P\hat{C}B = \frac{\pi}{2}$

$CAQ = \frac{\pi}{2}$

Tesi: $\overline{AQ} \cong \overline{PQ}$

1) $C\hat{A}B \cong C\hat{B}A$ – ABC isoscele.

2) $C\hat{B}P + C\hat{P}B = \frac{\pi}{2}$ – Proprietà triangolo rettangolo

3) $C\hat{A}B + Q\hat{A}P = \pi - C\hat{A}Q = \frac{\pi}{2}$ – $C\hat{A}Q = \frac{\pi}{2}$ per IP.

4) $Q\hat{P}A \cong Q\hat{A}P$ – complementari angoli congruenti (1), (2), (3)

5) $\overline{AQ} \cong \overline{PQ}$ – proprietà triangoli isosceli (4)

Q.E.D.

$AB = 2BC + 5$

$$\frac{3AB - BC}{2AB + BC} = \frac{4}{3}$$

$BC = x \quad \Rightarrow \quad AB = 2 \cdot x + 5$

$$\frac{3(2x+5) - x}{2(2x+5) + x} = \frac{4}{3}$$

$$\frac{6x + 15 - x}{4x + 10 + x} = \frac{4}{3}$$

$$\frac{5x + 15}{5x + 10} = \frac{4}{3} \qquad \frac{5x+15}{5(x+2)} - \frac{4}{3} = 0$$

$$\frac{3(5x+15) - 20(x+2)}{\cancel{15(x+2)}} = 0$$

C.E. $x \neq -2$
(x è comunque positivo)

$\cancel{15x - 20x}$

$15x + 45 - 20x - 40 = 0$

$-5x + 5 = 0 \qquad 5x = 5 \qquad \boxed{x = 1}$

Acc $\Rightarrow$ $BC = 1$, $AB = 7$

$2p = 2 \cdot (7+1) = \underline{16}$

Verifica B

1) A $(9y^4-6y^3-3y-2):(2-3y^2)$

$$
\begin{array}{l|l}
9y^4-6y^3+0-3y-2 & -3y^2+2 \\
\hline
-9y^4 \qquad +6y^2 & -3y^2+2y-2 \\
\hline
// \quad -6y^3+6y^2-3y & \\
\quad +6y^3 \qquad -4y & \\
\hline
// \quad 6y^2-7y-2 & \\
\quad -6y^2 \qquad +4 & \\
\hline
// \quad -7y+2 &
\end{array}
$$

Q: $-3y^2+2y-2$ R: $-7y+2$

proba

$(-3y^2+2y-2)\cdot(2-3y^2)-7y+2=$

$-\cancel{6y^2}+9y^4+4y-6y^3-4+\cancel{6y^2}-7y+2=$

$=9y^4-6y^3-3y-2$ ok

1) B $\quad (y^4+y-4):(y+2)$

$$
\begin{array}{r|rrrr|r}
 & 1 & 0 & 0 & 1 & -4 \\
-2 & & -2 & 4 & -8 & +14 \\
\hline
 & 1 & -2 & 4 & -7 & \cancel{+18} \\
 & & & & & +10 \\
 & y^3 & y^2 & y & &
\end{array}
$$

$Q: y^3-2y^2+4y-7 \qquad R: \cancel{+18}\ +10$

Prova

$(y^3-2y^2+4y-7)\cdot(y+2)+10 =$

$= y^4 \cancel{+2y^3} \cancel{-2y^3} \cancel{-4y^2} \cancel{+4y^2} + 8y - 7y - 14 + 10 =$

$= y^4+y-4 \qquad$ Ok

2) A (13)

$$(b^4 - 2b^3 - 3b - 1) : (2b^2 - \tfrac{1}{2})$$

$$\begin{array}{rrrrr|l}
b^4 & -2b^3 & 0 & -3b & -1 & 2b^2 - \frac{1}{2} \\
\cline{6-6}
-b^4 & 0 & +\frac{1}{4}b^2 & & & \frac{1}{2}b^2 - b + \frac{1}{8} \\
\hline
// & -2b^3 & \frac{1}{4}b^2 & -3b & & \\
 & 2b^3 & & -\frac{1}{2}b & & \\
\hline
 & // & \frac{1}{4}b^2 & -\frac{7}{2}b & -1 & \\
 & & -\frac{1}{4}b^2 & & +\frac{1}{16} & \\
\hline
 & & // & -\frac{7}{2}b & -\frac{15}{16} &
\end{array}$$

$Q = +\frac{1}{2}b^2 - b + \frac{1}{8}$ $\qquad R = -\frac{7}{2}b - \frac{15}{16}$

prova : $\left(\frac{1}{2}b^2 - b + \frac{1}{8}\right)\left(+2b^2 - \frac{1}{2}\right) - \frac{7}{2}b - \frac{15}{16} =$

$= b^4 - \cancel{\frac{1}{4}b^2} - 2b^3 + \frac{1}{2}b + \cancel{\frac{1}{4}b^2} - \frac{1}{16} - \frac{7}{2}b - \frac{15}{16} =$

$\underline{b^4 - 2b^3 - 3b - 1}$. ok

2) B $\quad (m^5 - 2m^3 + m + 1) : \left(m - \frac{1}{2}\right)$

	1	0	-2	0	1	1
$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{4}$	$-\frac{7}{8}$	$-\frac{7}{16}$	$\frac{9}{32}$
	1	$\frac{1}{2}$	$-\frac{7}{4}$	$-\frac{7}{8}$	$\frac{9}{16}$	$\frac{41}{32}$
	m^4	m^3	m^2	m		

$Q: m^4 + \frac{1}{2}m^3 - \frac{7}{4}m^2 - \frac{7}{8}m + \frac{9}{16} \qquad R: \frac{41}{32}$

PROVA : $\left(m^4 + \frac{1}{2}m^3 - \frac{7}{4}m^2 - \frac{7}{8}m + \frac{9}{16}\right)\left(m - \frac{1}{2}\right) + \frac{41}{32} =$

$= m^5 \cancel{- \frac{1}{2}m^4} \cancel{+ \frac{1}{2}m^4} - \frac{1}{4}m^3 - \frac{7}{4}m^3 \cancel{+ \frac{7}{8}m^2} \cancel{- \frac{7}{8}m^2} + \frac{7}{16}m + \frac{9}{16}m - \frac{9}{32} + \frac{41}{32} =$

$= m^5 - 2m^3 + m + 1$ $\qquad$ OK

3) Scomponi: $x^4-6x^3+5x^2+24x-36$ (15)

Divisori di 36: $\pm1; \pm2; \pm3; \pm4; \pm6 \dots$

Provo 1

$\cancel{1}\,\cancel{-6}\,\cancel{+5}+24-36 \neq 0$

Provo -1

$1+6+5-24-36 \neq 0$

Provo 2

$16-6\cdot8+5\cdot4+48-36 = 16-48+20+48-36 = \underline{\underline{0}}$

$$
\begin{array}{c|cccc|c}
 & 1 & -6 & 5 & 24 & -36 \\
2 & & 2 & -8 & -6 & 36 \\
\hline
 & 1 & -4 & -3 & 18 & 0
\end{array}
$$

$x^3-4x^2-3x+18$ $\boxed{(x-2)}$ primo fattore.

Provo ancora 2

$8-16-6+18 = 4 \neq 0$

Provo -2

$-8-16+6+18 = \underline{\underline{0}}$

	1	-4	-3	18
-2		-2	12	-18
	1	-6	9	0

$$x^2 - 6x + 9 = (x-3)^2 \qquad \boxed{x+2}$$

secondo fattore

$$x^4 - 6x^3 + 5x^2 + 24x - 36 = (x+2)(x-2)(x-3)^2$$

4)

$$\left(\frac{2}{x-1} + \frac{1}{x+1}\right)^{-1} : (x+1) - \frac{3x^2}{9x^2-1} = \frac{2}{3x-1}$$

$$\left(\frac{2(x+1) + (x-1)}{(x-1)(x+1)}\right)^{-1} \cdot \frac{1}{x+1} - \frac{3x^2}{(3x+1)(3x-1)} = \frac{2}{3x-1}$$

$$\left(\frac{(x-1)\cancel{(x+1)}}{2x+2+x-1}\right) \cdot \frac{1}{\cancel{(x+1)}} - \frac{3x^2}{(3x+1)(3x-1)} = \frac{2}{3x-1}$$

C.E.

$x-1 \neq 0 \quad x \neq 1$

$x+1 \neq 0 \quad x \neq -1$

$3x+1 \neq 0 \quad x \neq -\frac{1}{3}$

$3x-1 \neq 0 \quad x \neq \frac{1}{3}$

$$\frac{x-1}{3x+1} - \frac{3x^2}{(3x+1)(3x-1)} - \frac{2}{3x-1} = 0$$

$$\frac{(x-1)(3x-1) - 3x^2 - 2(3x+1)}{\cancel{(3x+1)(3x-1)}} = 0$$

$\cancel{3x} - x - 3x + 1 \ \cancel{-3x^2} - 6x - 2 = 0$

$-10x - 1 = 0 \quad -10x = +1 \quad \boxed{x = -\frac{1}{10}}$ Acc

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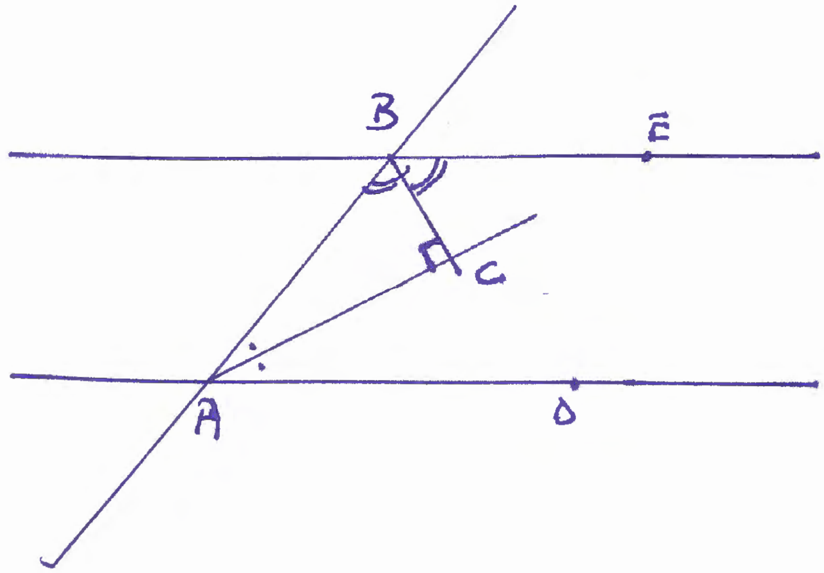
5)



HP: $BE \parallel AD$

$B\hat{A}C \cong C\hat{A}D$

$A\hat{B}C \cong E\hat{B}C$

Th: ~~BC~~ $B\hat{C}A = \frac{\pi}{2}$

1) $D\hat{A}B + A\hat{B}E = \pi$ — coniugati interni

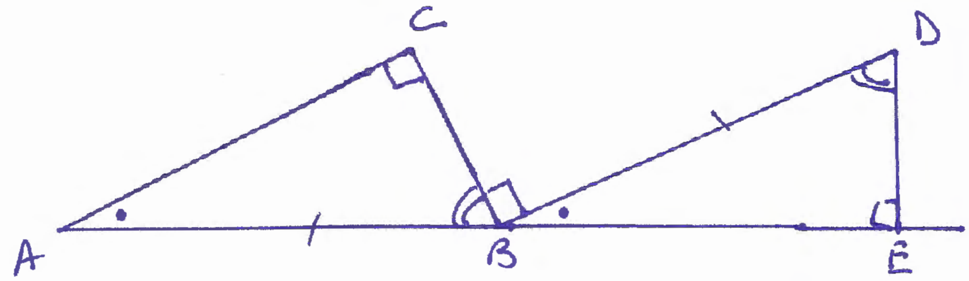
2) $D\hat{A}B = 2\,C\hat{A}B$ — per Ip. CA bisettrice di $B\hat{A}D$

3) $A\hat{B}E = 2\,A\hat{B}C$ — per Ip. BC bisettrice di $A\hat{B}E$

4) $2\,C\hat{A}B + 2\,A\hat{B}C = \pi$ — per (1), (2) e (3)

5) $C\hat{A}B + A\hat{B}C = \frac{\pi}{2}$ — per (4) . Q.E.D.

6)



HP: $AB \cong BD$

$A\hat{C}B \cong C\hat{B}D \cong B\hat{E}D = \frac{\pi}{2}$

Th: $\overset{\triangle}{ABC} \cong \overset{\triangle}{BDE}$

1) $A\hat{B}C + C\hat{A}B = \frac{\pi}{2}$ – Angoli acuti triangolo rettangolo

2) $A\hat{B}C + C\hat{B}D + D\hat{B}E = \pi$ – IP.

3) $A\hat{B}C + D\hat{B}E = \frac{\pi}{2}$ – per (2) e $C\hat{B}D = \frac{\pi}{2}$ (IP.)

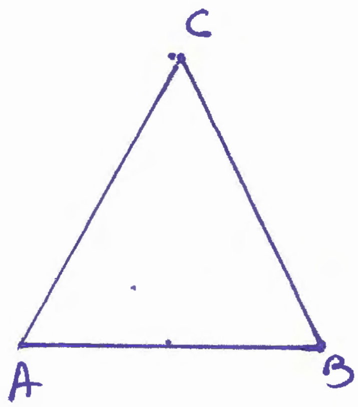
4) $D\hat{B}E \cong C\hat{A}B$ – per (1) e (3) – complementari stesso angolo

5) $B\hat{D}E \cong A\hat{B}C$ – per (1) e (4) – complementari angoli congruenti

6) $\overset{\triangle}{ABC} \cong \overset{\triangle}{BDE}$ – I criterio: $AC \cong BD$ (IP.); $C\hat{A}B \cong D\hat{B}E$ (4); $B\hat{D}E \cong A\hat{B}C$ (5)

Q.E.D.

7)



$BC = AB + 6$

$$\frac{CB + 5AB}{2AB} = \frac{10}{3}$$

$AB = x \quad \Rightarrow \quad BC = x + 6$

$$\frac{x + 6 + 5x}{2x} = \frac{10}{3}$$

C.E
$x \neq 0$

$$\frac{3(6x+6)}{\cancel{6x}} = \frac{20x}{\cancel{6x}}$$

$18x + 18 = 20x$

$2x = 18 \qquad \boxed{x = 9}$

$AB = 9$
$BC = 15$

$2p = 9 + 15 \cdot 2 = \boxed{39 \text{ cm}}$

verifica $\underline{C}$

1) A $\quad (m^5 - 2m^3 + m + 1) : (m^2 + m + 1)$

$$
\begin{array}{cccccc|l}
m^5 & 0 & -2m^3 & 0 & m & 1 & m^2+m+1 \\
\cline{7-7}
-m^5 & -m^4 & -m^3 & & & & m^3-m^2-2m+3 \\
\cline{1-6}
// & -m^4 & -3m^3 & 0 & & & \\
 & m^4 & +m^3 & +m^2 & & & \\
\cline{2-6}
 & // & -2m^3 & m^2 & m & & \\
 & & 2m^3 & 2m^2 & 2m & & \\
\cline{3-6}
 & & // & 3m^2 & 3m & 1 & \\
 & & & -3m^2 & -3m & -3 & \\
\cline{4-6}
 & & & // & // & -2 &
\end{array}
$$

$Q: m^3 - m^2 - 2m + 3 \qquad R: -2$

Prove:

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

$= m^5 + \cancel{m^4} + \cancel{m^3} - \cancel{m^4} - \cancel{m^3} - \cancel{m^2} - 2m^3 - \cancel{2m^2} - 2m + \cancel{3m^2} + 3m + 3 - 2 =$

$= m^5 - 2m^3 + m + 1 \qquad \underline{OK}$

1) B

$$(a^4 - 3a^3 - 1) : (a - 3)$$

$$\begin{array}{c|cccc|c} & 1 & -3 & 0 & 0 & -1 \\ 3 & & 3 & 0 & 0 & 0 \\ \hline & 1 & 0 & 0 & 0 & -1 \end{array}$$

$Q = a^3$ $\qquad$ $R = -1$

prove

$(a^3)(a-3) - 1 = a^4 - 3a^3 - 1$ $\quad$ ok

2) A $\qquad (t^4+t-4):\left(2t^2+\frac{1}{2}\right)$

$$
\begin{array}{ccccc|l}
t^4 & 0 & 0 & t & -4 & 2t^2+\frac{1}{2} \\
\cline{6-6}
-t^4 & & -\frac{1}{4}t^2 & & & \frac{1}{2}t^2-\frac{1}{8} \\
\cline{1-5}
// & & -\frac{1}{4}t^2 & t & -4 & \\
 & & \frac{1}{4}t^2 & & +\frac{1}{16} & \\
\cline{3-5}
 & & = & t & -\frac{63}{16} &
\end{array}
$$

$Q: \frac{1}{2}t^2-\frac{1}{8}$ $\qquad R: t-\frac{63}{16}$

PROVA

$$\left(\frac{1}{2}t^2-\frac{1}{8}\right)\left(2t^2+\frac{1}{2}\right)+t-\frac{63}{16}=$$

$$=t^4+\cancel{\frac{1}{4}t^2}-\cancel{\frac{1}{4}t^2}-\frac{1}{16}+t-\frac{63}{16}=t^4+t-4 \quad \underline{\underline{\text{OK}}}$$

2) B $\quad (9y^4-6y^3-3y-2):\left(y-\frac{1}{3}\right)$

	9	-6	0	-3	-2
$\frac{1}{3}$		3	-1	$-\frac{1}{3}$	$-\frac{10}{9}$
	9	-3	-1	$-\frac{10}{3}$	$-\frac{28}{9}$
	y^3	y^2	y		

$Q: 9y^3-3y^2-y-\frac{10}{3}$ $\qquad R: -\frac{28}{9}$

Prova: $\left(9y^3-3y^2-y-\frac{10}{3}\right)\cdot\left(y-\frac{1}{3}\right)-\frac{28}{9}=$

$9y^4-3y^3-3y^3+\cancel{y^2}\cancel{-y^2}+\frac{1}{3}y-\frac{10}{3}y+\frac{10}{9}-\frac{28}{9}=$

$9y^4-6y^3-\overset{3}{\cancel{\frac{9}{3}}}y-2$ $\qquad$ OK

3) scomponi

$$x^4 - x^3 - 10x^2 + 4x + 24$$

divisori di 24: $\pm 1 ; \pm 2 ; \pm 3 ; \pm 4 ; \pm 6 \ldots\ldots$

provo 1

$1 - 1 - 10 + 4 + 24 \neq 0$

provo -1

$1 + 1 - 10 - 4 + 24 \neq 0$

provo 2

$16 - 8 - 40 + 8 + 24 = \underline{\underline{0}}$

$$\begin{array}{c|cccc|c}
 & 1 & -1 & -10 & 4 & 24 \\
2 & & 2 & 2 & -16 & -24 \\
\hline
 & 1 & 1 & -8 & -12 & 0
\end{array}$$

$\boxed{x - 2}$ primo fattore

$$x^3 + x^2 - 8x - 12$$

provo ancora 2

$8 + 4 - 16 - 12 \neq 0$

provo -2

$$-8+4+16-12=0$$

	1	1	-8	-12
-2		-2	2	12
	1	-1	-6	0

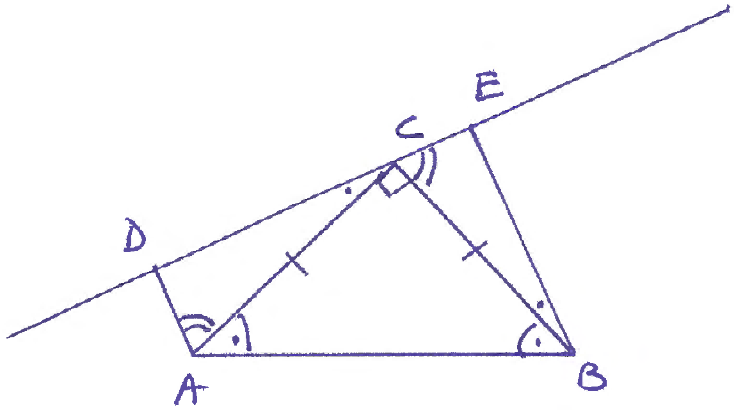
$x^2 - x - 6$ $\boxed{x+2}$ secondo fattore

$x^2 - x - 6 = (x-3)(x+2)$ trinomio notevole

$$x^4 - x^3 - 10x^2 + 4x + 24 = (x-2)(x+2)^2(x-3)$$

4) vedi pag. 6

5)



Hp: $\overline{CA} \cong \overline{CB}$

$A\hat{C}B \cong A\hat{D}C \cong C\hat{E}B = \frac{\pi}{2}$

Th $\overline{DE} = \overline{AD} + \overline{BE}$

1) $D\hat{C}A + A\hat{C}B + B\hat{C}E = \pi$ - per Ip.

2) $A\hat{B}C + B\hat{C}A + C\hat{A}B = \pi$ - somma angoli interni $A\overset{\triangle}{B}C$

3) $D\hat{C}A + E\hat{C}B = \pi - A\hat{C}B = \frac{\pi}{2}$ - per (2)

4) $D\hat{C}A \cong E\hat{B}C$ - complementari stesso angolo

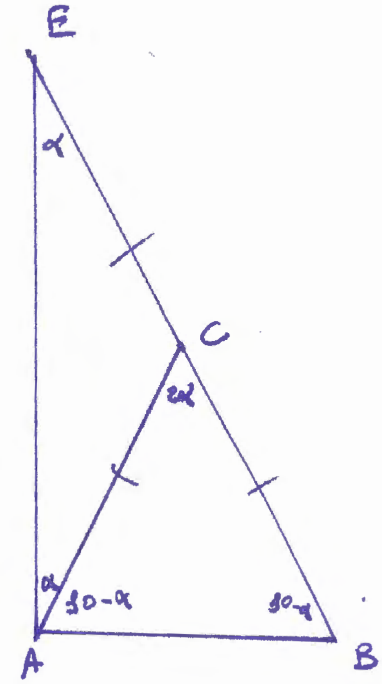
5) $D\hat{A}C \cong E\hat{C}B$ - complementari stesso angolo

6) $D\overset{\triangle}{A}C \cong E\overset{\triangle}{C}B$ - II criterio: $AC \cong BC$ (Ip), (4), (5)

7) $\overline{DA} \cong \overline{CE}$; $\overline{DC} \cong \overline{EB}$ - (6)

8) $DE \cong \overline{DC} + \overline{CE} \cong \overline{EB} + \overline{DA}$ Q. E. D.

6)



HP $AC \cong BC \cong CE$

TH $E\hat{A}B = \frac{\pi}{2}$

1) $A\hat{C}B = A\hat{E}C + E\hat{A}C$ – Angolo esterno

2) $A\hat{C}B = 2\,E\hat{A}C$ – (1) e proprietà triangoli isosceli

3) $A\hat{C}B + C\hat{A}B + C\hat{B}A = \pi$ – Angoli interni triangolo

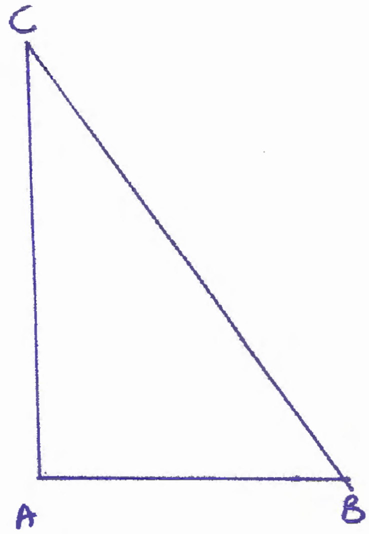
4) $2\,E\hat{A}C + 2\,C\hat{A}B = \pi$ – per (2) e proprietà triangoli isosceli

5) $E\hat{A}C + C\hat{A}B = \frac{\pi}{2}$ per 4

6) $E\hat{A}B = \frac{\pi}{2}$ per 5

Q.E.D.

7)



$AB = \frac{2}{3}AC + 1$

$\frac{AB + 2AC}{3AC - AB} = \frac{11}{9}$

$AC = x \qquad AB = \frac{2}{3}x + 1$

$$\frac{\frac{2}{3}x + 1 + 2x}{3x - \left(\frac{2}{3}x + 1\right)} = \frac{11}{9}$$

$$\frac{\frac{2x + 3 + 6x}{3}}{\frac{9x - 2x - 3}{3}} = \frac{11}{9}$$

C.E. $x \neq \frac{3}{7}$

$$\frac{2x + 3 + 6x}{\cancel{3}} \cdot \frac{\cancel{3}}{7x - 3} = \frac{11}{9}$$

$$\frac{8x + 3}{7x - 3} - \frac{11}{9} = 0 \qquad \frac{9(8x + 3) - 11(7x - 3)}{\cancel{9(7x - 3)}} = 0$$

$72x + 27 - 77x + 33 = 0$

$-5x = 60 \qquad x = 12$

$AC = 12 \qquad AB = \frac{2}{3} \cdot 12 + 1 = 9 \qquad BC = \sqrt{144 + 81} = \sqrt{225} = 15$

$2p = 12 + 9 + 15 = \boxed{36\ cm}$