$(a-b)^3 = a(a^2+3b^2) - b(b^2+3a) =$

$= (a^3-b^3-3a^2b+3ab^2) = a^3+3ab^2 -b^3-3a^2b$

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

$(x^2-4x+4) = x^2-4$

Verifica se le seguenti equazioni sono identità (p. 493)

26) $\frac{1}{2}(x+4) + x^2 - 2\left(\frac{1}{3}x+1\right) = \frac{1}{3}x\left(3x-\frac{1}{2}\right);$

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

$\frac{1}{6}x + x^2 = -\frac{1}{6}x + x^2$ $\boxed{\text{NO}}$

28) $\frac{1}{a} - \frac{1}{a+1} = -\frac{1}{a^2+1};$

$= \frac{(\cancel{a}+1)-\cancel{a}}{a(a+1)} = -\frac{1}{a^2+1};$

$\boxed{\text{NO}}$

$= \frac{1}{a^2+a} = \frac{-1}{\cdot 1+a^2}$

30) $(x-2)^3 + (x+2)(x+1)(x-2) + 13x^2 = 2x(x+2)^2 - 12;$

$x^3 - 8 - 6x^2 + 12x + (x^2-4)(x+1) + 13x^2 = 2x(x^2+4x+4) - 12;$

$x^3 - 8 - 6x^2 + 12x + x^3 + x^2 - 4x - 4 + 13x^2 = 2x^3 + 8x^2 + 8x - 12;$

$2x^3 + 8x^2 + 8x - 12 = 2x^3 + 8x^2 + 8x - 12$ $\boxed{\text{SI}}$

32) $\frac{13}{48} + \frac{x}{2} - \frac{(2x+1)}{6} = 1 - \left(\frac{1}{4}-x\right)\left(x+\frac{1}{4}\right) - \left(x+\frac{1}{2}\right)^2;$

$\frac{13+24x-16x-8}{48} = 1 - \left(\frac{1}{16}-x^2\right) - \left(x^2+x+\frac{1}{4}\right).$

$\frac{5+8x}{48} = 1 - \frac{1}{16} + \cancel{x^2} - \cancel{x^2} - x - \frac{1}{4}$

$\frac{5+8x}{48} = \frac{16-1-16x-4}{16};$

$\frac{5+8x}{48} = \frac{11-16x}{16}$ $\boxed{\text{NO}}$

34) $4x + 5 - 7x = 2K - 3x - 3K;$

$5 - 3x = -1K - 3x$ $\qquad$ SE $\quad K = -5$

36) $-2x + (K-2)(2K-x) = -K(4 - 2K + x);$

$-2x + 2K^2 - Kx - 4K + 2x = -4K + 2K^2 - Kx;$

$2K^2 - Kx - 4K = 2K^2 - Kx - 4K \qquad \forall K$

27) $(a-b)^3 = a(a^2 + 3b^2) - b(b^2 + 3a^2);$

$a^3 - b^3 - 3a^2 b + 3ab^2 = a^3 + 3ab^2 - b^3 - 3a^2 b \qquad \boxed{\text{SI}}$

29) $\left(\dfrac{m-n}{m+n} + \dfrac{m+n}{m-n}\right)\left(\dfrac{m-n}{m+n} - \dfrac{m+n}{m-n}\right) = \dfrac{8mn(m^2 + n^2)}{(m^2 - n^2)^2};$

$\left(\dfrac{(m-n)(m-n) + (m+n)(m+n)}{(m+n)(m-n)}\right)\left(\dfrac{(m-n)(m-n) - (m+n)(m+n)}{(m+n)(m-n)}\right) = \dfrac{8m^3 n + 8mn^3}{m^4 - 2m^2 n^2 + n^4};$

$\left(\dfrac{m^2 - 2mn + n^2 + m^2 + n^2 + 2mn}{(m+n)(m-n)}\right)\left(\dfrac{m^2 - 2mn + n^2 - m^2 - 2mn - n^2}{(m+n)(m-n)}\right) = \dfrac{8m^3 n + 8mn^3}{m^4 - 2m^2 n^2 + n^4};$

$\left(\dfrac{2m^2 + 2n^2}{(m+n)(m-n)}\right)\left(\dfrac{-4mn}{(m+n)(m-n)}\right) = \dfrac{8m^3 n + 8mn^3}{m^4 - 2m^2 n^2 + n^4};$

$\left(\dfrac{2(m^2 + n^2)}{(m^2 - n^2)}\right)\left(\dfrac{-4mn}{m^2 - n^2}\right) = \dfrac{- \cdot - \cdot -}{- \cdot - \cdot -};$

$\dfrac{8m^3 n + 8mn^3}{m^4 - 2m^2 n^2 + n^4} = \dfrac{8m^3 n + 8mn^3}{m^4 - 2m^2 n^2 + n^4} \qquad \boxed{\text{SI}}$

31) $\dfrac{(2x+2)(1-x)}{3} = \dfrac{2(1-2x)^2 - 6(x-1)^2}{2} - 3 + \dfrac{1}{3}(17 - 5x^2) - 2x;$

$\dfrac{2x - 2x^2 + 2 - 2x}{3} = \dfrac{2(1 + 4x^2 - 4x) - 6(x^2 - 2x + 1)}{2} - 3 + \dfrac{17}{3} - \dfrac{5}{3}x^2 - 2x;$

$\dfrac{-2x^2 + 2}{3} = \dfrac{2 + 8x^2 - 8x - 6x^2 + 12x - 6}{2} - 3 + \dfrac{17}{3} - \dfrac{5}{3}x^2 - 2x;$

$\dfrac{2(-x^2 + 1)}{3} = \dfrac{2x^2 + 4x - 4}{2} - 3 + \dfrac{17}{3} - \dfrac{5}{3}x^2 - 2x;$

$\dfrac{2(x+1)(1-x)}{3} = \dfrac{8(x^2 + 2x - 2)}{2} - 3 + \dfrac{17}{3} - \dfrac{5}{3}x^2 - 2x;$

$\dfrac{2(x+1)(1-x)}{3} = \dfrac{3x^2 + 6x - 6 - 9 + 17 - 5x^2 - 6x}{3}; \qquad \boxed{\text{SI}}$

$\dfrac{2(x+1)(1-x)}{3} = \dfrac{-2x^2 + 2}{3}; \quad \dfrac{2(x+1)(1-x)}{3} = \dfrac{2(1-x)(1+x)}{3}$

33) $3x+2 = 2(2x-1)-x+K$;

$3x+2 = 4x-2-x+K$;

$3x+2 = 3x-2+K$ $\boxed{K=4}$

37) $2,5x^2+Kx+K = x+2-\frac{1}{2}x^2+3x$;

$2,5x^2+Kx+K = x+2-\frac{5}{2}x^2$

195) $\frac{2-x}{3} - \frac{1}{5}x = \frac{4}{3}$;

$15 \cdot \frac{2-x}{3} - 15^3 \frac{1}{5}x = 15^5 \frac{4}{3}$;

$10-5x-3x = 20$

$10-8x = 20$

$-8x = 10$

$8x = -10$

$x = -10/8$; $x = -5/4$

190) $x^2-9 = (x-2)^2$;

$x^2-9 = x^2-4x+4$

$4x = 9+4$

$4x = 13$

$x = 13/4$

176) $\frac{x}{2} - 3+x = \frac{3}{2}x-2$;

$x-6+2x = 3x-4$;

$x+2x-3x = 6-4$;

$0x = 2$ EQ. IMPOSS.

175) $-5x+5+9x+\frac{1}{2} = \frac{13+2x}{2}-1+3x$;

$-10x+10+18x+1 = 13+2x-2+6x$;

$11 = 11$

$0x = 11-11$

$0x = 0$ EQ. INDETERMINATA

200) $\frac{7-2x}{3} + \frac{4}{5} = \frac{2-3x}{4}$;

$60 \cdot \frac{7-2x}{3} + 60 \cdot \frac{4}{5} = 60 \cdot \frac{2-3x}{4}$;

$140-40x+48 = 30-45x$;

$-40x+45x = 30-140-48$;

$\frac{+5x}{5} = \frac{-158}{5}$; $x = -\frac{158}{5}$

205) $3 - \dfrac{4-2x}{3} = 1$;

$9 - 4 + 2x = 3$;

$+2x = 3 - 9 + 4$;

$+2x = -2$;

$2x = -2$

$x = -1$

210) $2(x-2) + \dfrac{7(1-x)}{3} = 0$;

$3 \cdot (2x-4) + 7(1-x) = 0$;

$6x - 12 + 7 - 7x = 0$

$6x - 7x = 12 - 7$;

$-x = 5$

$x = -5$

215) $\dfrac{1/2(2x-3)}{5-\frac{3}{2}} = \dfrac{3-x}{7}$;

$\dfrac{x-\frac{3}{2}}{5-\frac{3}{2}} = -\dfrac{3-x}{7}$;

$\left(x - \dfrac{3}{2}\right) : \left(5 - \dfrac{3}{2}\right) = -\dfrac{3-x}{7}$;

$\left(\dfrac{2x-3}{2}\right) : \left(\dfrac{10-3}{2}\right) = -\dfrac{3-x}{7}$;

$\left(\dfrac{2x-3}{2}\right) \cdot \left(\dfrac{2}{10-3}\right) = -\dfrac{3-x}{7}$;

$\dfrac{2x-3}{10-3} = -\dfrac{3-x}{7}$;

$7(2x-3) = -7(3-x)$;

$14x - 21 = -21 - 7x$;

$14x + 7x = 0$;

$21x = 0; \quad x = 0$

220) $\dfrac{2x-5}{6} - \dfrac{3x-2}{3} = \dfrac{1}{2}x + 4$;

$\qquad 2x - 5 - 6x + 4 = 3x + 24$;

$\qquad 2x - 3x - 6x = 24 + 5 - 4$;

$\qquad -7x = 25$

$\qquad x = -2\dfrac{5}{7}$

225) $3\left(\dfrac{1}{6} - \dfrac{2}{5}\right) + 5\left(\dfrac{1}{6} + 2x\right) = 2\left(\dfrac{3}{5} + x\right)$;

$\qquad \dfrac{1}{2} - \dfrac{6}{5} + \dfrac{5}{6} + 10x = \dfrac{6}{5} + 2x$;

$\qquad 10x - 2x = \dfrac{6}{5} + \dfrac{6}{5} - \dfrac{1}{2} - \dfrac{5}{6}$;

$\qquad 8x = \dfrac{36 + 36 - 15 - 25}{30}$;

$\qquad 8x = \dfrac{32^{16}}{30_{15}}$; $\quad x = \dfrac{16^{2}}{15} \cdot \dfrac{1}{8_{1}}$; $\quad x = \dfrac{2}{15}$

230) $-2[5 - 3(x-1)] + 3(x+2) = 1$

$\qquad -2[5 - 3x + 3] + 3x + 6 = 1$;

$\qquad -10 + 6x - 6 + 3x + 6 = 1$;

$\qquad +6x + 3x = 1 + 10 + 6 - 6$;

$\qquad 9x = 11$; $\quad x = \dfrac{11}{9}$ IMPOSSIBILE

235) $\dfrac{x(3x-5)}{2} = \dfrac{(7+6x)(x-1)}{4}$;

$\qquad \dfrac{3x^2 - 5x}{2} = \dfrac{7x - 7 + 6x^2 - 6x}{4}$;

$\qquad 6x^2 - 10x = 7x - 7 + 6x^2 - 6x$;

$\qquad -10x - 7x + 6x = -7$;

$\qquad +11x = +7$

$\qquad x = \dfrac{7}{11}$

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240) $\frac{3-x}{2}+x-\frac{x-1}{5}+\frac{x}{2}=\frac{5+x}{2}-\frac{x}{2}$;

$15-5x+10x-2x+2+5x=25+5x-5x$;

$8x=8$

$x=1$

245) $12x\left(\frac{3}{9}x+3\right)-(3x+1)^2=\left[\left(9x-\frac{1}{3}\right)\frac{1}{6}+\frac{10x+19}{9}\right]9$;

$9x^2+36x-(9x^2+1+6x)=\left[\frac{3}{2}x-\frac{1}{18}+\frac{10x+19}{9}\right]9$;

$36x-1-6x=\left[\frac{27x-1+20x+38}{18}\right]9$;

$30x-1=\frac{47x+37}{18\,_2}\cdot 9^1$;

$60x-2=47x+37$;

$60x-47=39$;

$13x=39$; $x=3$

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

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

$\left(\frac{3x-2}{6}\right)-\left(\frac{2x-3}{6}\right)=\left(\frac{3x+2}{6}\right)-\left(\frac{2x+3}{6}\right)$;

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

$\frac{x+1}{6}=\frac{x-1}{6}$

$x+1=x-1$

$0x=-2$ IMPOSSIBILE