Esercizi su: Prodotti notevoli.

1. Esegui le seguenti moltiplicazioni.

   (a) $(-3x - 10)(7x) =$ $\qquad$ $[-21x^2 - 70x]$

   (b) $(2x - 4)(x - 7) =$ $\qquad$ $[2x^2 - 18x + 28]$

   (c) $(8x - 5)(5x - 1) =$ $\qquad$ $[40x^2 - 33x + 5]$

   (d) $(9x + 9)(-7x + 9) =$ $\qquad$ $[-63x^2 + 18x + 81]$

   (e) $(12x + 2)(-7x + 4) =$ $\qquad$ $[-84x^2 + 34x + 8]$

   (f) $(-12x - 1)(5x - 9) =$ $\qquad$ $[-60x^2 + 103x + 9]$

   (g) $(-7x - 2)(4x + 11) =$ $\qquad$ $[-28x^2 - 85x - 22]$

   (h) $(12x - 8)(-10x + 5) =$ $\qquad$ $[-120x^2 + 140x - 40]$

   (i) $(11x - 1)(6x^2 + 8) =$ $\qquad$ $[66x^3 - 6x^2 + 88x - 8]$

   (j) $(5x^2 + 6x - 6)(x - 11) =$ $\qquad$ $[5x^3 - 49x^2 - 72x + 66]$

   (k) $(12x^2 + 5x - 4)(5x + 6) =$ $\qquad$ $[60x^3 + 97x^2 + 10x - 24]$

   (l) $(12x^2 + 3x - 5)(2x - 9) =$ $\qquad$ $[24x^3 - 102x^2 - 37x + 45]$

   (m) $(-5x^2 + x - 7)(-4x - 4) =$ $\qquad$ $[20x^3 + 16x^2 + 24x + 28]$

   (n) $(-2x^2 - 12x + 7)(-x + 8) =$ $\qquad$ $[2x^3 - 4x^2 - 103x + 56]$

   (o) $(x^2 - 2x - 11)(-7x + 12) =$ $\qquad$ $[-7x^3 + 26x^2 + 53x - 132]$

   (p) $(-9x^2 - 12x - 7)(-10x + 6) =$ $\qquad$ $[90x^3 + 66x^2 - 2x - 42]$

   (q) $(6x + 2)(-10x^2 - 7x - 12) =$ $\qquad$ $[-60x^3 - 62x^2 - 86x - 24]$

   (r) $(12x + 7)(-4x^2 + 9x + 6) =$ $\qquad$ $[-48x^3 + 80x^2 + 135x + 42]$

   (s) $(-6x + 12)(-5x^2 + 7x - 12) =$ $\qquad$ $[30x^3 - 102x^2 + 156x - 144]$

   (t) $(-8x + 11)(7x^2 - 11x + 10) =$ $\qquad$ $[-56x^3 + 165x^2 - 201x + 110]$

   (u) $(4x^2 + 4x - 8)(-8x^2 - x - 2) =$ $\qquad$ $[-32x^4 - 36x^3 + 52x^2 + 16]$

   (v) $(-6x^2 - 12x - 10)(2x^2 - 4x - 9) =$ $\qquad$ $[-12x^4 + 82x^2 + 148x + 90]$

   (w) $(-6x^2 + 7x + 7)(12x^2 - 6x + 6) =$ $\qquad$ $[-72x^4 + 120x^3 + 6x^2 + 42]$

   (x) $(4x^2 + 8x - 2)(4x^2 + 9x + 9) =$ $\qquad$ $[16x^4 + 68x^3 + 100x^2 + 54x - 18]$

   (y) $(-6x^2 - 7x + 10)(x^2 + 5x - 9) =$ $\qquad$ $[-6x^4 - 37x^3 + 29x^2 + 113x - 90]$

   (z) $(-8x^2 + 12x + 8)(-11x^2 - 6x - 10) =$ $\qquad$ $[88x^4 - 84x^3 - 80x^2 - 168x - 80]$

2. Esegui le seguenti moltiplicazioni.

   (a) $\left(-\frac{x}{4} + 3\right)\left(-\frac{5x}{7} - 3\right) =$ $\qquad$ $[\frac{5x^2}{28} - \frac{39x}{28} - 9]$

   (b) $\left(\frac{4x}{3} + \frac{1}{3}\right)\left(-x + \frac{2}{5}\right) =$ $\qquad$ $[-\frac{4x^2}{3} + \frac{x}{5} + \frac{2}{15}]$

   (c) $\left(x^2 - \frac{12x}{5} - 9\right)\left(-x + \frac{2}{3}\right) =$ $\qquad$ $[-x^3 + \frac{46x^2}{15} + \frac{37x}{5} - 6]$

   (d) $\left(-x - \frac{9}{11}\right)\left(\frac{x}{2} - \frac{3}{4}\right) =$ $\qquad$ $[-\frac{x^2}{2} + \frac{15x}{44} + \frac{27}{44}]$

   (e) $\left(-x - \frac{5}{4}\right)\left(\frac{7x}{10} - \frac{1}{4}\right) =$ $\qquad$ $[-\frac{7x^2}{10} - \frac{5x}{8} + \frac{5}{16}]$

   (f) $\left(\frac{9x}{4} + \frac{1}{2}\right)\left(\frac{x}{6} - \frac{1}{3}\right) =$ $\qquad$ $[\frac{3x^2}{8} - \frac{2x}{3} - \frac{1}{6}]$

   (g) $\left(\frac{3x}{2} - \frac{1}{10}\right)\left(\frac{7x}{9} - \frac{3}{10}\right) =$ $\qquad$ $[\frac{7x^2}{6} - \frac{19x}{36} + \frac{3}{100}]$

   (h) $\left(-\frac{3x}{2} - \frac{6}{11}\right)\left(\frac{11x}{3} + \frac{5}{3}\right) =$ $\qquad$ $[-\frac{11x^2}{2} - \frac{9x}{2} - \frac{10}{11}]$

(i) $\left(-\frac{7x}{6}\right)\left(\frac{x^2}{2} - \frac{2x}{11} - \frac{3}{2}\right) =$ $\qquad$ $\left[-\frac{7x^3}{12} + \frac{7x^2}{33} + \frac{7x}{4}\right]$

(j) $\left(\frac{4x^2}{5} - \frac{3x}{5} + \frac{3}{5}\right)\left(-3x - \frac{4}{3}\right) =$ $\qquad$ $\left[-\frac{12x^3}{5} + \frac{11x^2}{15} - x - \frac{4}{5}\right]$

(k) $\left(\frac{6x^2}{5} + \frac{x}{3} - \frac{4}{3}\right)\left(x + \frac{7}{2}\right) =$ $\qquad$ $\left[\frac{6x^3}{5} + \frac{68x^2}{15} - \frac{x}{6} - \frac{14}{3}\right]$

(l) $\left(x^2 + 4x - \frac{9}{8}\right)\left(-\frac{4x}{5} - \frac{3}{4}\right) =$ $\qquad$ $\left[-\frac{4x^3}{5} - \frac{79x^2}{20} - \frac{21x}{10} + \frac{27}{32}\right]$

(m) $\left(-\frac{x}{5} + \frac{1}{4}\right)\left(\frac{2x^2}{7} - 3x - \frac{3}{2}\right) =$ $\qquad$ $\left[-\frac{2x^3}{35} + \frac{47x^2}{70} - \frac{9x}{20} - \frac{3}{8}\right]$

(n) $\left(3x + \frac{4}{3}\right)\left(-\frac{7x^2}{2} - \frac{4x}{3} + \frac{4}{3}\right) =$ $\qquad$ $\left[-\frac{21x^3}{2} - \frac{26x^2}{3} + \frac{20x}{9} + \frac{16}{9}\right]$

(o) $\left(4x^2 - \frac{5x}{7} + \frac{1}{11}\right)\left(\frac{11x}{10} - \frac{5}{7}\right) =$ $\qquad$ $\left[\frac{22x^3}{5} - \frac{51x^2}{14} + \frac{299x}{490} - \frac{5}{77}\right]$

(p) $\left(2x^2 - \frac{8x}{11} - \frac{4}{7}\right)\left(-\frac{9x}{11} - \frac{1}{6}\right) =$ $\qquad$ $\left[-\frac{18x^3}{11} + \frac{95x^2}{363} + \frac{136x}{231} + \frac{2}{21}\right]$

(q) $\left(-\frac{2x}{5} + 1\right)\left(-\frac{9x^2}{11} + \frac{11x}{7} - \frac{2}{11}\right) =$ $\qquad$ $\left[\frac{18x^3}{55} - \frac{557x^2}{385} + \frac{633x}{385} - \frac{2}{11}\right]$

(r) $\left(-\frac{7x^2}{2} - \frac{x}{5} + \frac{4}{3}\right)\left(-\frac{7x}{10} + \frac{11}{9}\right) =$ $\qquad$ $\left[\frac{49x^3}{20} - \frac{931x^2}{225} - \frac{53x}{45} + \frac{44}{27}\right]$

(s) $\left(-\frac{11x^2}{8} + \frac{11x}{12} - \frac{12}{11}\right)\left(\frac{x}{2} - \frac{1}{11}\right) =$ $\qquad$ $\left[-\frac{11x^3}{16} + \frac{7x^2}{12} - \frac{83x}{132} + \frac{12}{121}\right]$

(t) $\left(\frac{3x^2}{7} - 10x + \frac{9}{8}\right)\left(x^2 + 8x - \frac{4}{9}\right) =$ $\qquad$ $\left[\frac{3x^4}{7} - \frac{46x^3}{7} - \frac{13283x^2}{168} + \frac{121x}{9} - \frac{1}{2}\right]$

(u) $\left(-\frac{8x}{11} + \frac{3}{10}\right)\left(-\frac{3x^2}{2} - \frac{2x}{7} - \frac{8}{11}\right) =$ $\qquad$ $\left[\frac{12x^3}{11} - \frac{373x^2}{1540} + \frac{1877x}{4235} - \frac{12}{55}\right]$

(v) $\left(\frac{9x^2}{2} + \frac{4x}{7} - 1\right)\left(\frac{2x^2}{3} - \frac{x}{3} - \frac{5}{11}\right) =$ $\qquad$ $\left[3x^4 - \frac{47x^3}{42} - \frac{447x^2}{154} + \frac{17x}{231} + \frac{5}{11}\right]$

(w) $\left(\frac{11x^2}{12} - \frac{7x}{6} + \frac{12}{11}\right)\left(-3x^2 + 4x - \frac{5}{7}\right) =$ $\qquad$ $\left[-\frac{11x^4}{4} + \frac{43x^3}{6} - \frac{2647x^2}{308} + \frac{343x}{66} - \frac{60}{77}\right]$

(x) $\left(x^2 + \frac{x}{2} - \frac{11}{7}\right)\left(-\frac{12x^2}{11} + \frac{3x}{5} + \frac{2}{5}\right) =$ $\qquad$ $\left[-\frac{12x^4}{11} + \frac{3x^3}{55} + \frac{169x^2}{70} - \frac{26x}{35} - \frac{22}{35}\right]$

(y) $\left(\frac{12x^2}{7} + \frac{10x}{3} - 2\right)\left(\frac{7x^2}{9} - \frac{3x}{11} + \frac{12}{11}\right) =$ $\qquad$ $\left[\frac{4x^4}{3} + \frac{4418x^3}{2079} - \frac{412x^2}{693} + \frac{46x}{11} - \frac{24}{11}\right]$

(z) $\left(-\frac{x^2}{6} + \frac{x}{10} + \frac{1}{8}\right)\left(\frac{12x^2}{11} + \frac{4x}{3} - \frac{4}{7}\right) =$ $\qquad$ $\left[-\frac{2x^4}{11} - \frac{56x^3}{495} + \frac{281x^2}{770} + \frac{23x}{210} - \frac{1}{14}\right]$

3. Calcola i prodotti del tipo somma per differenza.

(a) $(-x - 6)(-x + 6) =$ $\qquad$ $[x^2 - 36]$

(b) $(3x - 3)(3x + 3) =$ $\qquad$ $[9x^2 - 9]$

(c) $(3x - 1)(3x + 1) =$ $\qquad$ $[9x^2 - 1]$

(d) $(5x - 1)(5x + 1) =$ $\qquad$ $[25x^2 - 1]$

(e) $(5x - 3)(5x + 3) =$ $\qquad$ $[25x^2 - 9]$

(f) $(3x + 6)(3x - 6) =$ $\qquad$ $[9x^2 - 36]$

(g) $(5x + 3)(5x - 3) =$ $\qquad$ $[25x^2 - 9]$

(h) $(2x + 5)(2x - 5) =$ $\qquad$ $[4x^2 - 25]$

(i) $(2x - 5)(2x + 5) =$ $\qquad$ $[4x^2 - 25]$

(j) $(4x - 5)(4x + 5) =$ $\qquad$ $[16x^2 - 25]$

(k) $(5x - 4)(5x + 4) =$ $\qquad$ $[25x^2 - 16]$

(l) $(6x - 5)(6x + 5) =$ $\qquad$ $[36x^2 - 25]$

(m) $(5x + 6)(5x - 6) =$ $\qquad$ $[25x^2 - 36]$

(n) $(5x - 4)(5x + 4) =$ $\qquad$ $[25x^2 - 16]$

(o) $(-3x - 1)(-3x + 1) =$ $\qquad$ $[9x^2 - 1]$

(p) $(-3x+2)(-3x-2) =$ $\qquad$ $[9x^2-4]$

(q) $(-3x-6)(-3x+6) =$ $\qquad$ $[9x^2-36]$

(r) $(-5x-1)(-5x+1) =$ $\qquad$ $[25x^2-1]$

(s) $(-5x+1)(-5x-1) =$ $\qquad$ $[25x^2-1]$

(t) $(-6x-1)(-6x+1) =$ $\qquad$ $[36x^2-1]$

(u) $(-3x-6)(-3x+6) =$ $\qquad$ $[9x^2-36]$

(v) $(-4x+6)(-4x-6) =$ $\qquad$ $[16x^2-36]$

(w) $(-5x-4)(-5x+4) =$ $\qquad$ $[25x^2-16]$

(x) $(-4x+4)(-4x-4) =$ $\qquad$ $[16x^2-16]$

(y) $(-6x+5)(-6x-5) =$ $\qquad$ $[36x^2-25]$

(z) $(-5x-4)(-5x+4) =$ $\qquad$ $[25x^2-16]$

4. Calcola i prodotti del tipo somma per differenza.

(a) $(x-1)(x+1) =$ $\qquad$ $[x^2-1]$

(b) $(x+2)(x-2) =$ $\qquad$ $[x^2-4]$

(c) $(x+1)(x-1) =$ $\qquad$ $[x^2-1]$

(d) $(x+6)(x-6) =$ $\qquad$ $[x^2-36]$

(e) $\left(\frac{x}{2}+2\right)\left(\frac{x}{2}-2\right) =$ $\qquad$ $[\frac{x^2}{4}-4]$

(f) $\left(x+\frac{4}{5}\right)\left(x-\frac{4}{5}\right) =$ $\qquad$ $[x^2-\frac{16}{25}]$

(g) $\left(-x+\frac{1}{2}\right)\left(-x-\frac{1}{2}\right) =$ $\qquad$ $[x^2-\frac{1}{4}]$

(h) $\left(-\frac{x}{2}+3\right)\left(-\frac{x}{2}-3\right) =$ $\qquad$ $[\frac{x^2}{4}-9]$

(i) $\left(-x-\frac{3}{4}\right)\left(-x+\frac{3}{4}\right) =$ $\qquad$ $[x^2-\frac{9}{16}]$

(j) $\left(3x-\frac{1}{2}\right)\left(3x+\frac{1}{2}\right) =$ $\qquad$ $[9x^2-\frac{1}{4}]$

(k) $\left(\frac{3x}{2}+4\right)\left(\frac{3x}{2}-4\right) =$ $\qquad$ $[\frac{9x^2}{4}-16]$

(l) $\left(5x-\frac{1}{2}\right)\left(5x+\frac{1}{2}\right) =$ $\qquad$ $[25x^2-\frac{1}{4}]$

(m) $\left(4x-\frac{5}{3}\right)\left(4x+\frac{5}{3}\right) =$ $\qquad$ $[16x^2-\frac{25}{9}]$

(n) $\left(3x-\frac{4}{5}\right)\left(3x+\frac{4}{5}\right) =$ $\qquad$ $[9x^2-\frac{16}{25}]$

(o) $\left(-3x+\frac{3}{2}\right)\left(-3x-\frac{3}{2}\right) =$ $\qquad$ $[9x^2-\frac{9}{4}]$

(p) $\left(-5x+\frac{1}{3}\right)\left(-5x-\frac{1}{3}\right) =$ $\qquad$ $[25x^2-\frac{1}{9}]$

(q) $\left(-\frac{3x}{5}+1\right)\left(-\frac{3x}{5}-1\right) =$ $\qquad$ $[\frac{9x^2}{25}-1]$

(r) $\left(-2x-\frac{5}{6}\right)\left(-2x+\frac{5}{6}\right) =$ $\qquad$ $[4x^2-\frac{25}{36}]$

(s) $\left(-\frac{x}{2}+\frac{1}{2}\right)\left(-\frac{x}{2}-\frac{1}{2}\right) =$ $\qquad$ $[\frac{x^2}{4}-\frac{1}{4}]$

(t) $\left(-\frac{x}{2}-\frac{1}{6}\right)\left(-\frac{x}{2}+\frac{1}{6}\right) =$ $\qquad$ $[\frac{x^2}{4}-\frac{1}{36}]$

(u) $\left(\frac{5x}{2}-\frac{3}{2}\right)\left(\frac{5x}{2}+\frac{3}{2}\right) =$ $\qquad$ $[\frac{25x^2}{4}-\frac{9}{4}]$

(v) $\left(-\frac{x}{5}+\frac{4}{5}\right)\left(-\frac{x}{5}-\frac{4}{5}\right) =$ $\qquad$ $[\frac{x^2}{25}-\frac{16}{25}]$

(w) $\left(\frac{3x}{2}-\frac{3}{4}\right)\left(\frac{3x}{2}+\frac{3}{4}\right) =$ $\qquad$ $[\frac{9x^2}{4}-\frac{9}{16}]$

(x) $\left(\frac{5x}{4}-\frac{1}{2}\right)\left(\frac{5x}{4}+\frac{1}{2}\right) =$ $\qquad$ $[\frac{25x^2}{16}-\frac{1}{4}]$

(y) $\left(\frac{6x}{5}-\frac{1}{5}\right)\left(\frac{6x}{5}+\frac{1}{5}\right) =$ $\qquad$ $[\frac{36x^2}{25}-\frac{1}{25}]$

(z) $\left(-\frac{5x}{4}-\frac{3}{4}\right)\left(-\frac{5x}{4}+\frac{3}{4}\right) =$ $\qquad$ $[\frac{25x^2}{16}-\frac{9}{16}]$

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5. Calcola i seguenti quadrati di binomi.

   (a) $(x-1)^2$ $[x^2-2x+1]$

   (b) $(x-4)^2$ $[x^2-8x+16]$

   (c) $(x-6)^2$ $[x^2-12x+36]$

   (d) $(-x+1)^2$ $[x^2-2x+1]$

   (e) $(4x+1)^2$ $[16x^2+8x+1]$

   (f) $(4x+1)^2$ $[16x^2+8x+1]$

   (g) $(2x+4)^2$ $[4x^2+16x+16]$

   (h) $(-3x+1)^2$ $[9x^2-6x+1]$

   (i) $(-3x-1)^2$ $[9x^2+6x+1]$

   (j) $(3x-6)^2$ $[9x^2-36x+36]$

   (k) $(-3x+1)^2$ $[9x^2-6x+1]$

   (l) $(3x-5)^2$ $[9x^2-30x+25]$

   (m) $(-2x-1)^2$ $[4x^2+4x+1]$

   (n) $(4x+2)^2$ $[16x^2+16x+4]$

   (o) $(5x-4)^2$ $[25x^2-40x+16]$

   (p) $(6x-4)^2$ $[36x^2-48x+16]$

   (q) $(-2x+3)^2$ $[4x^2-12x+9]$

   (r) $(6x+6)^2$ $[36x^2+72x+36]$

   (s) $(-3x+3)^2$ $[9x^2-18x+9]$

   (t) $(4x-4)^2$ $[16x^2-32x+16]$

   (u) $(5x+4)^2$ $[25x^2+40x+16]$

   (v) $(-6x+3)^2$ $[36x^2-36x+9]$

   (w) $(-2x+6)^2$ $[4x^2-24x+36]$

   (x) $(-6x-2)^2$ $[36x^2+24x+4]$

   (y) $(-5x+6)^2$ $[25x^2-60x+36]$

   (z) $(-6x+6)^2$ $[36x^2-72x+36]$

6. Calcola i seguenti quadrati di binomi.

   (a) $(-x+1)^2$ $[x^2-2x+1]$

   (b) $(3x+1)^2$ $[9x^2+6x+1]$

   (c) $(3x+4)^2$ $[9x^2+24x+16]$

   (d) $(-3x-1)^2$ $[9x^2+6x+1]$

   (e) $(-4x+1)^2$ $[16x^2-8x+1]$

   (f) $\left(-x-\frac{1}{2}\right)^2$ $[x^2+x+\frac{1}{4}]$

   (g) $\left(\frac{x}{2}+2\right)^2$ $[\frac{x^2}{4}+2x+4]$

   (h) $\left(6x-\frac{2}{3}\right)^2$ $[36x^2-8x+\frac{4}{9}]$

   (i) $\left(-3x+\frac{5}{3}\right)^2$ $[9x^2-10x+\frac{25}{9}]$

   (j) $\left(-2x-\frac{5}{2}\right)^2$ $[4x^2+10x+\frac{25}{4}]$

(k) $\left(x+\frac{2}{3}\right)^2$ $\qquad$ $[x^2+\frac{4x}{3}+\frac{4}{9}]$

(l) $\left(-\frac{x}{6}+1\right)^2$ $\qquad$ $[\frac{x^2}{36}-\frac{x}{3}+1]$

(m) $\left(-3x-\frac{6}{5}\right)^2$ $\qquad$ $[9x^2+\frac{36x}{5}+\frac{36}{25}]$

(n) $\left(-\frac{2x}{3}-\frac{3}{4}\right)^2$ $\qquad$ $[\frac{4x^2}{9}+x+\frac{9}{16}]$

(o) $\left(\frac{x}{2}+\frac{1}{3}\right)^2$ $\qquad$ $[\frac{x^2}{4}+\frac{x}{3}+\frac{1}{9}]$

(p) $\left(-\frac{4x}{5}+\frac{5}{2}\right)^2$ $\qquad$ $[\frac{16x^2}{25}-4x+\frac{25}{4}]$

(q) $\left(\frac{x}{4}+\frac{1}{3}\right)^2$ $\qquad$ $[\frac{x^2}{16}+\frac{x}{6}+\frac{1}{9}]$

(r) $\left(-\frac{5x}{3}+\frac{6}{5}\right)^2$ $\qquad$ $[\frac{25x^2}{9}-4x+\frac{36}{25}]$

(s) $\left(-\frac{x}{2}-\frac{1}{5}\right)^2$ $\qquad$ $[\frac{x^2}{4}+\frac{x}{5}+\frac{1}{25}]$

(t) $\left(-\frac{x}{6}+\frac{1}{2}\right)^2$ $\qquad$ $[\frac{x^2}{36}-\frac{x}{6}+\frac{1}{4}]$

(u) $\left(-\frac{x}{3}-\frac{5}{4}\right)^2$ $\qquad$ $[\frac{x^2}{9}+\frac{5x}{6}+\frac{25}{16}]$

(v) $\left(-\frac{x}{5}+\frac{3}{4}\right)^2$ $\qquad$ $[\frac{x^2}{25}-\frac{3x}{10}+\frac{9}{16}]$

(w) $\left(\frac{3x}{2}+\frac{5}{2}\right)^2$ $\qquad$ $[\frac{9x^2}{4}+\frac{15x}{2}+\frac{25}{4}]$

(x) $\left(-\frac{2x}{3}-\frac{2}{3}\right)^2$ $\qquad$ $[\frac{4x^2}{9}+\frac{8x}{9}+\frac{4}{9}]$

(y) $\left(-\frac{5x}{6}-\frac{4}{5}\right)^2$ $\qquad$ $[\frac{25x^2}{36}+\frac{4x}{3}+\frac{16}{25}]$

(z) $\left(\frac{5x}{6}+\frac{5}{6}\right)^2$ $\qquad$ $[\frac{25x^2}{36}+\frac{25x}{18}+\frac{25}{36}]$

7. Calcola i seguenti quadrati di trinomi.

(a) $\left(-2x^2+2x+1\right)^2$ $\qquad$ $[4x^4-8x^3+4x+1]$

(b) $\left(-x^2-3x+4\right)^2$ $\qquad$ $[x^4+6x^3+x^2-24x+16]$

(c) $\left(x^2+4x+3\right)^2$ $\qquad$ $[x^4+8x^3+22x^2+24x+9]$

(d) $\left(x^2+5x-1\right)^2$ $\qquad$ $[x^4+10x^3+23x^2-10x+1]$

(e) $\left(x^2-2x+5\right)^2$ $\qquad$ $[x^4-4x^3+14x^2-20x+25]$

(f) $\left(-2x^2-x-1\right)^2$ $\qquad$ $[4x^4+4x^3+5x^2+2x+1]$

(g) $\left(-x^2+3x-5\right)^2$ $\qquad$ $[x^4-6x^3+19x^2-30x+25]$

(h) $\left(2x^2+3x+1\right)^2$ $\qquad$ $[4x^4+12x^3+13x^2+6x+1]$

(i) $\left(4x^2-2x-1\right)^2$ $\qquad$ $[16x^4-16x^3-4x^2+4x+1]$

(j) $\left(2x^2+4x-1\right)^2$ $\qquad$ $[4x^4+16x^3+12x^2-8x+1]$

(k) $\left(3x^2-5x-2\right)^2$ $\qquad$ $[9x^4-30x^3+13x^2+20x+4]$

(l) $\left(4x^2-6x-4\right)^2$ $\qquad$ $[16x^4-48x^3+4x^2+48x+16]$

(m) $\left(6x^2-5x+3\right)^2$ $\qquad$ $[36x^4-60x^3+61x^2-30x+9]$

(n) $\left(6x^2+3x+3\right)^2$ $\qquad$ $[36x^4+36x^3+45x^2+18x+9]$

(o) $\left(3x^2+2x-4\right)^2$ $\qquad$ $[9x^4+12x^3-20x^2-16x+16]$

(p) $\left(4x^2-4x+3\right)^2$ $\qquad$ $[16x^4-32x^3+40x^2-24x+9]$

(q) $\left(4x^2+4x+4\right)^2$ $\qquad$ $[16x^4+32x^3+48x^2+32x+16]$

(r) $\left(-5x^2+x-6\right)^2$ $\qquad$ $[25x^4-10x^3+61x^2-12x+36]$

(s) $\left(-3x^2+6x-1\right)^2$ $[9x^4-36x^3+42x^2-12x+1]$

(t) $\left(6x^2-2x-6\right)^2$ $[36x^4-24x^3-68x^2+24x+36]$

(u) $\left(-2x^2+4x+5\right)^2$ $[4x^4-16x^3-4x^2+40x+25]$

(v) $\left(-6x^2-3x+3\right)^2$ $[36x^4+36x^3-27x^2-18x+9]$

(w) $\left(-3x^2-4x-5\right)^2$ $[9x^4+24x^3+46x^2+40x+25]$

(x) $\left(-5x^2-3x-5\right)^2$ $[25x^4+30x^3+59x^2+30x+25]$

(y) $\left(-4x^2+3x-4\right)^2$ $[16x^4-24x^3+41x^2-24x+16]$

(z) $\left(-5x^2+2x-6\right)^2$ $[25x^4-20x^3+64x^2-24x+36]$

8. Calcola i seguenti quadrati di trinomi.

(a) $\left(x^2+x+1\right)^2$ $[x^4+2x^3+3x^2+2x+1]$

(b) $\left(x^2+2x-1\right)^2$ $[x^4+4x^3+2x^2-4x+1]$

(c) $\left(-3x^2-6x-6\right)^2$ $[9x^4+36x^3+72x^2+72x+36]$

(d) $\left(x^2-\frac{x}{2}-3\right)^2$ $[x^4-x^3-\frac{23x^2}{4}+3x+9]$

(e) $\left(2x^2+\frac{x}{2}-2\right)^2$ $[4x^4+2x^3-\frac{31x^2}{4}-2x+4]$

(f) $\left(2x^2-\frac{x}{2}-3\right)^2$ $[4x^4-2x^3-\frac{47x^2}{4}+3x+9]$

(g) $\left(-5x^2+x-\frac{5}{2}\right)^2$ $[25x^4-10x^3+26x^2-5x+\frac{25}{4}]$

(h) $\left(-\frac{3x^2}{4}-4x-2\right)^2$ $[\frac{9x^4}{16}+6x^3+19x^2+16x+4]$

(i) $\left(-2x^2-x+\frac{5}{4}\right)^2$ $[4x^4+4x^3-4x^2-\frac{5x}{2}+\frac{25}{16}]$

(j) $\left(\frac{x^2}{6}+x-4\right)^2$ $[\frac{x^4}{36}+\frac{x^3}{3}-\frac{x^2}{3}-8x+16]$

(k) $\left(-\frac{2x^2}{3}+x+1\right)^2$ $[\frac{4x^4}{9}-\frac{4x^3}{3}-\frac{x^2}{3}+2x+1]$

(l) $\left(\frac{3x^2}{2}-2x-\frac{2}{3}\right)^2$ $[\frac{9x^4}{4}-6x^3+2x^2+\frac{8x}{3}+\frac{4}{9}]$

(m) $\left(-\frac{5x^2}{4}-\frac{x}{2}+2\right)^2$ $[\frac{25x^4}{16}+\frac{5x^3}{4}-\frac{19x^2}{4}-2x+4]$

(n) $\left(-\frac{x^2}{2}-x+\frac{1}{3}\right)^2$ $[\frac{x^4}{4}+x^3+\frac{2x^2}{3}-\frac{2x}{3}+\frac{1}{9}]$

(o) $\left(\frac{4x^2}{5}-x-\frac{1}{2}\right)^2$ $[\frac{16x^4}{25}-\frac{8x^3}{5}+\frac{x^2}{5}+x+\frac{1}{4}]$

(p) $\left(-\frac{2x^2}{5}+\frac{3x}{2}-5\right)^2$ $[\frac{4x^4}{25}-\frac{6x^3}{5}+\frac{25x^2}{4}-15x+25]$

(q) $\left(-\frac{5x^2}{6}+\frac{6x}{5}+1\right)^2$ $[\frac{25x^4}{36}-2x^3-\frac{17x^2}{75}+\frac{12x}{5}+1]$

(r) $\left(\frac{x^2}{3}+\frac{5x}{6}+5\right)^2$ $[\frac{x^4}{9}+\frac{5x^3}{9}+\frac{145x^2}{36}+\frac{25x}{3}+25]$

(s) $\left(-\frac{x^2}{3}-3x+\frac{1}{5}\right)^2$ $[\frac{x^4}{9}+2x^3+\frac{133x^2}{15}-\frac{6x}{5}+\frac{1}{25}]$

(t) $\left(\frac{x^2}{4}-x-\frac{4}{3}\right)^2$ $[\frac{x^4}{16}-\frac{x^3}{2}+\frac{x^2}{3}+\frac{8x}{3}+\frac{16}{9}]$

(u) $\left(\frac{5x^2}{3}+\frac{6x}{5}+\frac{5}{2}\right)^2$ $[\frac{25x^4}{9}+4x^3+\frac{733x^2}{75}+6x+\frac{25}{4}]$

(v) $\left(\frac{x^2}{3}-\frac{x}{4}+\frac{4}{5}\right)^2$ $[\frac{x^4}{9}-\frac{x^3}{6}+\frac{143x^2}{240}-\frac{2x}{5}+\frac{16}{25}]$

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(w) $\left(\frac{x^2}{2} + \frac{6x}{5} + \frac{2}{3}\right)^2$ $\qquad [\frac{x^4}{4} + \frac{6x^3}{5} + \frac{158x^2}{75} + \frac{8x}{5} + \frac{4}{9}]$

(x) $\left(-\frac{4x^2}{5} - \frac{x}{2} + \frac{1}{2}\right)^2$ $\qquad [\frac{16x^4}{25} + \frac{4x^3}{5} - \frac{11x^2}{20} - \frac{x}{2} + \frac{1}{4}]$

(y) $\left(-\frac{x^2}{5} - \frac{5x}{3} - \frac{5}{4}\right)^2$ $\qquad [\frac{x^4}{25} + \frac{2x^3}{3} + \frac{59x^2}{18} + \frac{25x}{6} + \frac{25}{16}]$

(z) $\left(-\frac{3x^2}{5} - \frac{2x}{5} + \frac{1}{2}\right)^2$ $\qquad [\frac{9x^4}{25} + \frac{12x^3}{25} - \frac{11x^2}{25} - \frac{2x}{5} + \frac{1}{4}]$

9. Calcola i seguenti prodotti di binomi particolari.

(a) $(x-3)(x+3) =$ $\qquad [x^2 - 9]$

(b) $(x+2)(x-2) =$ $\qquad [x^2 - 4]$

(c) $(x-4)(x+4) =$ $\qquad [x^2 - 16]$

(d) $(x-2)(x+1) =$ $\qquad [x^2 - x - 2]$

(e) $(x+3)(x-2) =$ $\qquad [x^2 + x - 6]$

(f) $(x+5)(x-4) =$ $\qquad [x^2 + x - 20]$

(g) $(x+6)(x-5) =$ $\qquad [x^2 + x - 30]$

(h) $(x+4)(x-3) =$ $\qquad [x^2 + x - 12]$

(i) $(x-5)(x+1) =$ $\qquad [x^2 - 4x - 5]$

(j) $(x-1)(x-6) =$ $\qquad [x^2 - 7x + 6]$

(k) $(x-1)(x-5) =$ $\qquad [x^2 - 6x + 5]$

(l) $(x-5)(x-1) =$ $\qquad [x^2 - 6x + 5]$

(m) $(x+1)(x-5) =$ $\qquad [x^2 - 4x - 5]$

(n) $(x+2)(x+1) =$ $\qquad [x^2 + 3x + 2]$

(o) $(x-3)(x-2) =$ $\qquad [x^2 - 5x + 6]$

(p) $(x+6)(x-1) =$ $\qquad [x^2 + 5x - 6]$

(q) $(x+1)(x+4) =$ $\qquad [x^2 + 5x + 4]$

(r) $(x+1)(x+4) =$ $\qquad [x^2 + 5x + 4]$

(s) $(x-2)(x+5) =$ $\qquad [x^2 + 3x - 10]$

(t) $(x+3)(x-5) =$ $\qquad [x^2 - 2x - 15]$

(u) $(x-2)(x+5) =$ $\qquad [x^2 + 3x - 10]$

(v) $(x+2)(x+6) =$ $\qquad [x^2 + 8x + 12]$

(w) $(x-5)(x-4) =$ $\qquad [x^2 - 9x + 20]$

(x) $(x+6)(x+2) =$ $\qquad [x^2 + 8x + 12]$

(y) $(x-2)(x+5) =$ $\qquad [x^2 + 3x - 10]$

(z) $(x+5)(x+6) =$ $\qquad [x^2 + 11x + 30]$

10. Calcola i seguenti prodotti di binomi particolari.

(a) $(x+1)(x-3) =$ $\qquad [x^2 - 2x - 3]$

(b) $(x+2)(x+3) =$ $\qquad [x^2 + 5x + 6]$

(c) $(x-1)(x-2) =$ $\qquad [x^2 - 3x + 2]$

(d) $(x+6)(x+3) =$ $\qquad [x^2 + 9x + 18]$

(e) $(x-6)\left(x-\frac{1}{6}\right) =$ $\qquad [x^2 - \frac{37x}{6} + 1]$

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

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

(h) $(x-1)\left(x+\frac{1}{2}\right) =$ $[x^2 - \frac{x}{2} - \frac{1}{2}]$

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

(j) $(x+1)\left(x-\frac{3}{5}\right) =$ $[x^2 + \frac{2x}{5} - \frac{3}{5}]$

(k) $\left(x+\frac{2}{3}\right)(x+1) =$ $[x^2 + \frac{5x}{3} + \frac{2}{3}]$

(l) $\left(x+\frac{1}{4}\right)(x-1) =$ $[x^2 - \frac{3x}{4} - \frac{1}{4}]$

(m) $\left(x-\frac{5}{3}\right)\left(x+\frac{6}{5}\right) =$ $[x^2 - \frac{7x}{15} - 2]$

(n) $\left(x+\frac{3}{4}\right)(x-6) =$ $[x^2 - \frac{21x}{4} - \frac{9}{2}]$

(o) $\left(x-\frac{2}{5}\right)(x+6) =$ $[x^2 + \frac{28x}{5} - \frac{12}{5}]$

(p) $\left(x-\frac{5}{4}\right)(x+5) =$ $[x^2 + \frac{15x}{4} - \frac{25}{4}]$

(q) $\left(x+\frac{5}{3}\right)\left(x-\frac{3}{2}\right) =$ $[x^2 + \frac{x}{6} - \frac{5}{2}]$

(r) $\left(x+\frac{1}{3}\right)\left(x-\frac{1}{6}\right) =$ $[x^2 + \frac{x}{6} - \frac{1}{18}]$

(s) $\left(x+\frac{2}{3}\right)\left(x+\frac{2}{3}\right) =$ $[x^2 + \frac{4x}{3} + \frac{4}{9}]$

(t) $\left(x+\frac{1}{4}\right)\left(x+\frac{3}{2}\right) =$ $[x^2 + \frac{7x}{4} + \frac{3}{8}]$

(u) $\left(x+\frac{4}{3}\right)\left(x-\frac{1}{4}\right) =$ $[x^2 + \frac{13x}{12} - \frac{1}{3}]$

(v) $\left(x+\frac{1}{4}\right)\left(x+\frac{4}{5}\right) =$ $[x^2 + \frac{21x}{20} + \frac{1}{5}]$

(w) $\left(x+\frac{5}{4}\right)\left(x+\frac{3}{2}\right) =$ $[x^2 + \frac{11x}{4} + \frac{15}{8}]$

(x) $\left(x-\frac{3}{2}\right)\left(x-\frac{1}{5}\right) =$ $[x^2 - \frac{17x}{10} + \frac{3}{10}]$

(y) $\left(x+\frac{1}{6}\right)\left(x-\frac{5}{4}\right) =$ $[x^2 - \frac{13x}{12} - \frac{5}{24}]$

(z) $\left(x+\frac{3}{5}\right)\left(x+\frac{1}{6}\right) =$ $[x^2 + \frac{23x}{30} + \frac{1}{10}]$

11. Calcola i seguenti cubi di binomi.

(a) $(x-1)^3$ $[x^3 - 3x^2 + 3x - 1]$

(b) $(x+1)^3$ $[x^3 + 3x^2 + 3x + 1]$

(c) $(x+1)^3$ $[x^3 + 3x^2 + 3x + 1]$

(d) $(x+2)^3$ $[x^3 + 6x^2 + 12x + 8]$

(e) $(x-4)^3$ $[x^3 - 12x^2 + 48x - 64]$

(f) $(2x-1)^3$ $[8x^3 - 12x^2 + 6x - 1]$

(g) $(4x+1)^3$ $[64x^3 + 48x^2 + 12x + 1]$

(h) $(3x+2)^3$ $[27x^3 + 54x^2 + 36x + 8]$

(i) $(2x-4)^3$ $[8x^3 - 48x^2 + 96x - 64]$

(j) $(2x-4)^3$ $[8x^3 - 48x^2 + 96x - 64]$

(k) $(2x-4)^3$ $[8x^3 - 48x^2 + 96x - 64]$

(l) $(-2x+1)^3$ $[-8x^3 + 12x^2 - 6x + 1]$

(m) $(4x+3)^3$ $[64x^3 + 144x^2 + 108x + 27]$

(n) $(4x-3)^3$ $[64x^3 - 144x^2 + 108x - 27]$

(o) $(4x-3)^3$ $[64x^3 - 144x^2 + 108x - 27]$

(p) $(-3x-1)^3$ $[-27x^3 - 27x^2 - 9x - 1]$

(q) $(-2x-3)^3$ $[-8x^3 - 36x^2 - 54x - 27]$

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(r) $(-4x+2)^3$ $\qquad$ $[-64x^3+96x^2-48x+8]$

(s) $(-2x-4)^3$ $\qquad$ $[-8x^3-48x^2-96x-64]$

(t) $(-4x-2)^3$ $\qquad$ $[-64x^3-96x^2-48x-8]$

(u) $(-4x-4)^3$ $\qquad$ $[-64x^3-192x^2-192x-64]$

(v) $(-4x-3)^3$ $\qquad$ $[-64x^3-144x^2-108x-27]$

(w) $(-4x+4)^3$ $\qquad$ $[-64x^3+192x^2-192x+64]$

(x) $(-3x+4)^3$ $\qquad$ $[-27x^3+108x^2-144x+64]$

(y) $(-4x+4)^3$ $\qquad$ $[-64x^3+192x^2-192x+64]$

(z) $(-3x+4)^3$ $\qquad$ $[-27x^3+108x^2-144x+64]$

12. Calcola i seguenti cubi di binomi.

(a) $(x-1)^3$ $\qquad$ $[x^3-3x^2+3x-1]$

(b) $(x+1)^3$ $\qquad$ $[x^3+3x^2+3x+1]$

(c) $(x-1)^3$ $\qquad$ $[x^3-3x^2+3x-1]$

(d) $(-x-1)^3$ $\qquad$ $[-x^3-3x^2-3x-1]$

(e) $(-x-1)^3$ $\qquad$ $[-x^3-3x^2-3x-1]$

(f) $(-x+3)^3$ $\qquad$ $[-x^3+9x^2-27x+27]$

(g) $(4x+2)^3$ $\qquad$ $[64x^3+96x^2+48x+8]$

(h) $(4x+1)^3$ $\qquad$ $[64x^3+48x^2+12x+1]$

(i) $\left(\frac{3x}{2}-4\right)^3$ $\qquad$ $[\frac{27x^3}{8}-27x^2+72x-64]$

(j) $\left(\frac{x}{4}-2\right)^3$ $\qquad$ $[\frac{x^3}{64}-\frac{3x^2}{8}+3x-8]$

(k) $\left(-x-\frac{2}{3}\right)^3$ $\qquad$ $[-x^3-2x^2-\frac{4x}{3}-\frac{8}{27}]$

(l) $\left(\frac{4x}{3}-1\right)^3$ $\qquad$ $[\frac{64x^3}{27}-\frac{16x^2}{3}+4x-1]$

(m) $\left(2x-\frac{3}{2}\right)^3$ $\qquad$ $[8x^3-18x^2+\frac{27x}{2}-\frac{27}{8}]$

(n) $\left(x+\frac{1}{2}\right)^3$ $\qquad$ $[x^3+\frac{3x^2}{2}+\frac{3x}{4}+\frac{1}{8}]$

(o) $\left(x+\frac{1}{4}\right)^3$ $\qquad$ $[x^3+\frac{3x^2}{4}+\frac{3x}{16}+\frac{1}{64}]$

(p) $\left(x+\frac{3}{2}\right)^3$ $\qquad$ $[x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}]$

(q) $\left(-\frac{x}{2}-1\right)^3$ $\qquad$ $[-\frac{x^3}{8}-\frac{3x^2}{4}-\frac{3x}{2}-1]$

(r) $\left(-x+\frac{1}{2}\right)^3$ $\qquad$ $[-x^3+\frac{3x^2}{2}-\frac{3x}{4}+\frac{1}{8}]$

(s) $\left(\frac{x}{2}+\frac{4}{3}\right)^3$ $\qquad$ $[\frac{x^3}{8}+x^2+\frac{8x}{3}+\frac{64}{27}]$

(t) $\left(-3x-\frac{1}{2}\right)^3$ $\qquad$ $[-27x^3-\frac{27x^2}{2}-\frac{9x}{4}-\frac{1}{8}]$

(u) $\left(-3x-\frac{1}{4}\right)^3$ $\qquad$ $[-27x^3-\frac{27x^2}{4}-\frac{9x}{16}-\frac{1}{64}]$

(v) $\left(-\frac{3x}{4}-1\right)^3$ $\qquad$ $[-\frac{27x^3}{64}-\frac{27x^2}{16}-\frac{9x}{4}-1]$

(w) $\left(\frac{2x}{3}+\frac{3}{4}\right)^3$ $\qquad$ $[\frac{8x^3}{27}+x^2+\frac{9x}{8}+\frac{27}{64}]$

(x) $\left(\frac{3x}{4}+\frac{4}{3}\right)^3$ $\qquad$ $[\frac{27x^3}{64}+\frac{9x^2}{4}+4x+\frac{64}{27}]$

(y) $\left(-\frac{x}{4}+\frac{4}{3}\right)^3$ $\qquad$ $[-\frac{x^3}{64}+\frac{x^2}{4}-\frac{4x}{3}+\frac{64}{27}]$

(z) $\left(\frac{x}{4}-\frac{3}{2}\right)^3$ $\qquad$ $[\frac{x^3}{64}-\frac{9x^2}{32}+\frac{27x}{16}-\frac{27}{8}]$

13. Calcola le seguenti potenze di binomi.

(a) $(x+1)^4$

$[x^4+4x^3+6x^2+4x+1]$

(b) $(-x-1)^4$

$[x^4+4x^3+6x^2+4x+1]$

(c) $(x+2)^4$

$[x^4+8x^3+24x^2+32x+16]$

(d) $(-x+3)^4$

$[x^4-12x^3+54x^2-108x+81]$

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

$[16x^4+64x^3+96x^2+64x+16]$

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

$[16x^4-64x^3+96x^2-64x+16]$

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

$[16x^4-96x^3+216x^2-216x+81]$

(h) $(x+1)^5$

$[x^5+5x^4+10x^3+10x^2+5x+1]$

(i) $(x+1)^5$

$[x^5+5x^4+10x^3+10x^2+5x+1]$

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

$[16x^4+96x^3+216x^2+216x+81]$

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

$[16x^4-96x^3+216x^2-216x+81]$

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

$[81x^4-216x^3+216x^2-96x+16]$

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

$[81x^4+324x^3+486x^2+324x+81]$

(n) $(-x-1)^5$

$[-x^5-5x^4-10x^3-10x^2-5x-1]$

(o) $(-x-2)^5$

$[-x^5-10x^4-40x^3-80x^2-80x-32]$

(p) $(-x-2)^5$

$[-x^5-10x^4-40x^3-80x^2-80x-32]$

(q) $(-x+3)^5$

$[-x^5+15x^4-90x^3+270x^2-405x+243]$

(r) $(-x-3)^5$

$[-x^5-15x^4-90x^3-270x^2-405x-243]$

(s) $(2x-2)^5$

$[32x^5-160x^4+320x^3-320x^2+160x-32]$

(t) $(3x+2)^5$

$[243x^5+810x^4+1080x^3+720x^2+240x+32]$

(u) $(-3x-1)^5$

$[-243x^5-405x^4-270x^3-90x^2-15x-1]$

(v) $(-3x-1)^5$

$[-243x^5-405x^4-270x^3-90x^2-15x-1]$

(w) $(3x-3)^5$

$[243x^5-1215x^4+2430x^3-2430x^2+1215x-243]$

(x) $(-3x-2)^5$

$[-243x^5-810x^4-1080x^3-720x^2-240x-32]$

(y) $(3x-3)^5$

$[243x^5-1215x^4+2430x^3-2430x^2+1215x-243]$

(z) $(-2x-3)^5$

$[-32x^5-240x^4-720x^3-1080x^2-810x-243]$

14. Calcola le seguenti potenze di binomi.

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

$[16x^4-64x^3+96x^2-64x+16]$

(b) $(-x-1)^5$

$[-x^5-5x^4-10x^3-10x^2-5x-1]$

(c) $(-x-1)^5$

$[-x^5-5x^4-10x^3-10x^2-5x-1]$

(d) $(x+3)^5$

$[x^5+15x^4+90x^3+270x^2+405x+243]$

(e) $(-x-3)^5$

$[-x^5-15x^4-90x^3-270x^2-405x-243]$

(f) $(-2x+1)^5$

$[-32x^5+80x^4-80x^3+40x^2-10x+1]$

(g) $\left(2x+\frac{1}{2}\right)^4$

$[16x^4+16x^3+6x^2+x+\frac{1}{16}]$

(h) $\left(2x-\frac{1}{2}\right)^4$

$[16x^4-16x^3+6x^2-x+\frac{1}{16}]$

(i) $(-3x-1)^5$

$[-243x^5-405x^4-270x^3-90x^2-15x-1]$

(j) $\left(\frac{x}{2}-2\right)^5$

$[\frac{x^5}{32}-\frac{5x^4}{8}+5x^3-20x^2+40x-32]$

(k) $\left(-3x-\frac{1}{2}\right)^4$

$[81x^4+54x^3+\frac{27x^2}{2}+\frac{3x}{2}+\frac{1}{16}]$

(l) $\left(\frac{x}{3}+2\right)^4$ $\qquad$ $[\frac{x^4}{81}+\frac{8x^3}{27}+\frac{8x^2}{3}+\frac{32x}{3}+16]$

(m) $\left(-\frac{x}{2}+\frac{1}{2}\right)^4$ $\qquad$ $[\frac{x^4}{16}-\frac{x^3}{4}+\frac{3x^2}{8}-\frac{x}{4}+\frac{1}{16}]$

(n) $\left(-x-\frac{1}{2}\right)^5$ $\qquad$ $[-x^5-\frac{5x^4}{2}-\frac{5x^3}{2}-\frac{5x^2}{4}-\frac{5x}{16}-\frac{1}{32}]$

(o) $\left(x+\frac{1}{3}\right)^5$ $\qquad$ $[x^5+\frac{5x^4}{3}+\frac{10x^3}{9}+\frac{10x^2}{27}+\frac{5x}{81}+\frac{1}{243}]$

(p) $\left(-x-\frac{1}{2}\right)^5$ $\qquad$ $[-x^5-\frac{5x^4}{2}-\frac{5x^3}{2}-\frac{5x^2}{4}-\frac{5x}{16}-\frac{1}{32}]$

(q) $\left(\frac{x}{3}+1\right)^5$ $\qquad$ $[\frac{x^5}{243}+\frac{5x^4}{81}+\frac{10x^3}{27}+\frac{10x^2}{9}+\frac{5x}{3}+1]$

(r) $\left(-x-\frac{1}{3}\right)^5$ $\qquad$ $[-x^5-\frac{5x^4}{3}-\frac{10x^3}{9}-\frac{10x^2}{27}-\frac{5x}{81}-\frac{1}{243}]$

(s) $\left(-\frac{3x}{2}+\frac{1}{2}\right)^4$ $\qquad$ $[\frac{81x^4}{16}-\frac{27x^3}{4}+\frac{27x^2}{8}-\frac{3x}{4}+\frac{1}{16}]$

(t) $\left(\frac{3x}{2}+\frac{3}{2}\right)^4$ $\qquad$ $[\frac{81x^4}{16}+\frac{81x^3}{4}+\frac{243x^2}{8}+\frac{81x}{4}+\frac{81}{16}]$

(u) $\left(-\frac{2x}{3}+1\right)^5$ $\qquad$ $[-\frac{32x^5}{243}+\frac{80x^4}{81}-\frac{80x^3}{27}+\frac{40x^2}{9}-\frac{10x}{3}+1]$

(v) $\left(-\frac{3x}{2}-1\right)^5$ $\qquad$ $[-\frac{243x^5}{32}-\frac{405x^4}{16}-\frac{135x^3}{4}-\frac{45x^2}{2}-\frac{15x}{2}-1]$

(w) $\left(-\frac{3x}{2}+1\right)^5$ $\qquad$ $[-\frac{243x^5}{32}+\frac{405x^4}{16}-\frac{135x^3}{4}+\frac{45x^2}{2}-\frac{15x}{2}+1]$

(x) $\left(\frac{x}{3}+\frac{1}{3}\right)^5$ $\qquad$ $[\frac{x^5}{243}+\frac{5x^4}{243}+\frac{10x^3}{243}+\frac{10x^2}{243}+\frac{5x}{243}+\frac{1}{243}]$

(y) $\left(-\frac{x}{3}-\frac{2}{3}\right)^5$ $\qquad$ $[-\frac{x^5}{243}-\frac{10x^4}{243}-\frac{40x^3}{243}-\frac{80x^2}{243}-\frac{80x}{243}-\frac{32}{243}]$

(z) $\left(-\frac{2x}{3}+\frac{1}{3}\right)^5$ $\qquad$ $[-\frac{32x^5}{243}+\frac{80x^4}{243}-\frac{80x^3}{243}+\frac{40x^2}{243}-\frac{10x}{243}+\frac{1}{243}]$

15. Esegui i seguenti prodotti.

(a) $(4x+5)(-10x+7)=$ $\qquad$ $[-40x^2-22x+35]$

(b) $\left(-x-\frac{6}{11}\right)\left(\frac{5x^2}{3}+\frac{11x}{10}+\frac{5}{7}\right)=$ $\qquad$ $[-\frac{5x^3}{3}-\frac{221x^2}{110}-\frac{46x}{35}-\frac{30}{77}]$

(c) $\left(4x+\frac{4}{3}\right)^3$ $\qquad$ $[64x^3+64x^2+\frac{64x}{3}+\frac{64}{27}]$

(d) $\left(-4x+\frac{1}{6}\right)^2$ $\qquad$ $[16x^2-\frac{4x}{3}+\frac{1}{36}]$

(e) $\left(6x+\frac{2}{5}\right)^2$ $\qquad$ $[36x^2+\frac{24x}{5}+\frac{4}{25}]$

(f) $\left(4x-\frac{1}{2}\right)^3$ $\qquad$ $[64x^3-24x^2+3x-\frac{1}{8}]$

(g) $\left(-\frac{2x^2}{3}+x-3\right)\left(-\frac{3x}{2}-\frac{1}{2}\right)=$ $\qquad$ $[x^3-\frac{7x^2}{6}+4x+\frac{3}{2}]$

(h) $(x-3)(x-1)=$ $\qquad$ $[x^2-4x+3]$

(i) $(x-5)\left(x-\frac{4}{3}\right)=$ $\qquad$ $[x^2-\frac{19x}{3}+\frac{20}{3}]$

(j) $\left(2x-\frac{8}{9}\right)(-9x+7)=$ $\qquad$ $[-18x^2+22x-\frac{56}{9}]$

(k) $\left(-\frac{x^2}{2}-\frac{3x}{2}+1\right)^2$ $\qquad$ $[\frac{x^4}{4}+\frac{3x^3}{2}+\frac{5x^2}{4}-3x+1]$

(l) $\left(-4x-\frac{6}{5}\right)\left(-4x+\frac{6}{5}\right)=$ $\qquad$ $[16x^2-\frac{36}{25}]$

(m) $(-2x-2)^3$ $\qquad$ $[-8x^3-24x^2-24x-8]$

(n) $(x-6)(x-5)=$ $\qquad$ $[x^2-11x+30]$

(o) $(-x-3)^4$ $\qquad$ $[x^4+12x^3+54x^2+108x+81]$

(p) $\left(\frac{2x^2}{5}+x+\frac{3}{2}\right)^2$ $\qquad$ $[\frac{4x^4}{25}+\frac{4x^3}{5}+\frac{11x^2}{5}+3x+\frac{9}{4}]$

(q) $(3x+1)^5$ $\qquad$ $[243x^5+405x^4+270x^3+90x^2+15x+1]$

(r) $\left(x-\frac{1}{3}\right)\left(x+\frac{1}{3}\right)=$ $\qquad$ $[x^2-\frac{1}{9}]$

(s) $(x+6)^2$ $\qquad$ $[x^2+12x+36]$

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(t) $\left(-\frac{2x}{5} - \frac{2}{3}\right)\left(-\frac{2x}{5} + \frac{2}{3}\right) =$ $\qquad$ $[\frac{4x^2}{25} - \frac{4}{9}]$

(u) $\left(-\frac{5x^2}{3} - \frac{4x}{3} - \frac{4}{3}\right)^2$ $\qquad$ $[\frac{25x^4}{9} + \frac{40x^3}{9} + \frac{56x^2}{9} + \frac{32x}{9} + \frac{16}{9}]$

(v) $(-3x - 10)\left(-10x^2 + 5x + 1\right) =$ $\qquad$ $[30x^3 + 85x^2 - 53x - 10]$

(w) $\left(-x^2 + 12x - 3\right)\left(10x^2 + 4x - 3\right) =$ $\qquad$ $[-10x^4 + 116x^3 + 21x^2 - 48x + 9]$

(x) $(-3x - 1)^4$ $\qquad$ $[81x^4 + 108x^3 + 54x^2 + 12x + 1]$

(y) $(-x + 1)^5$ $\qquad$ $[-x^5 + 5x^4 - 10x^3 + 10x^2 - 5x + 1]$

(z) $\left(-4x^2 - 7x - 8\right)(-6x + 5) =$ $\qquad$ $[24x^3 + 22x^2 + 13x - 40]$