

a) $3\sqrt{108} + 1/10\sqrt{625} + 1/7\sqrt{1715} - 4\sqrt{32}$

$$3\sqrt{(2^2 \cdot 3^2 \cdot 3)} + 1/10\sqrt{(5^2 \cdot 5^2)} + 1/7\sqrt{(2 \cdot 7^2 \cdot 7)} - 4\sqrt{(2^2 \cdot 2^2)}$$

$$3 \cdot 2 \cdot 3 \sqrt{3} + 1/10 \cdot 5 \cdot 5 + 1/7 \cdot 2 \cdot 7 \sqrt{7} - 4 \cdot 2 \cdot 2 \sqrt{2}$$

$$18\sqrt{3} + 5/2 + 2\sqrt{7} - 16\sqrt{2}$$

c) $2/3\sqrt{108} + 2\sqrt{54} - 1/5\sqrt{32} - 1/3\sqrt{75}$

$$2/3\sqrt{(2^2 \cdot 3^2 \cdot 3)} + 2\sqrt{(2 \cdot 3^2 \cdot 3)} - 1/5\sqrt{(2^2 \cdot 2^2 \cdot 2)} - 1/3\sqrt{(2 \cdot 3^2 \cdot 3)}$$

$$2/3 \cdot 2 \cdot 3 \sqrt{3} + 2 \cdot 3 \sqrt{(2 \cdot 3)} - 1/5 \cdot 2 \cdot 2 \sqrt{2} - 1/3 \cdot 3 \sqrt{(2 \cdot 3)}$$

$$4\sqrt{3} + 6\sqrt{6} - 4/5\sqrt{2} - \sqrt{6}$$

$$4\sqrt{3} + 5\sqrt{6} - 4/5\sqrt{2}$$

e) $(7\sqrt{5} - 11\sqrt{7})(5\sqrt{5} - 8\sqrt{7})$

$$35(5) - 56\sqrt{5}\sqrt{7} - 55\sqrt{5}\sqrt{7} + 88(7)$$

$$175 - 56\sqrt{(5 \cdot 7)} - 55\sqrt{(5 \cdot 7)} + 616$$

$$891 - 111\sqrt{35}$$

i) $\frac{\sqrt{2X} + \sqrt{Y}}{\sqrt{X} - \sqrt{2Y}}$

$$\frac{\sqrt{2X} + \sqrt{Y}}{\sqrt{X} - \sqrt{2Y}} \cdot \frac{\sqrt{X} + \sqrt{2Y}}{\sqrt{X} + \sqrt{2Y}}$$

$$\frac{x\sqrt{2} + 3\sqrt{(X \cdot Y)} + Y\sqrt{2}}{X - 2Y}$$

k) $\frac{3\sqrt{2} - 2\sqrt{3}}{3\sqrt{2} + 2\sqrt{3}}$

$$\frac{3\sqrt{2} - 2\sqrt{3}}{3\sqrt{2} + 2\sqrt{3}} \cdot \frac{3\sqrt{2} - 2\sqrt{3}}{3\sqrt{2} - 2\sqrt{3}}$$

$$\frac{3\sqrt{2} - 2\sqrt{3}}{3\sqrt{2} + 2\sqrt{3}} \cdot \frac{3\sqrt{2} - 2\sqrt{3}}{3\sqrt{2} - 2\sqrt{3}}$$

$$\frac{9(2) - 2 \cdot 3\sqrt{2} \cdot 2\sqrt{3} + 4(3)}{9(2) - 4(3)}$$

$$\frac{18 - 12\sqrt{2}\sqrt{3} + 12}{18 - 12}$$

$$\frac{30 - 12\sqrt{6}}{6} = \frac{6(5 - 2\sqrt{6})}{6} = 5 - 2\sqrt{6}$$

b) $3/4\sqrt{176} - 2/3\sqrt{45} + 1/8\sqrt{320} + 1/5\sqrt{275}$

$$3/4\sqrt{(2^2 \cdot 2^2 \cdot 11)} - 2/3\sqrt{(3^2 \cdot 5)} + 1/8\sqrt{(2^2 \cdot 2^2 \cdot 2^2 \cdot 5)} + 1/5\sqrt{(5^2 \cdot 11)}$$

$$3/4 \cdot 2 \cdot 2 \sqrt{11} - 2/3 \cdot 3 \sqrt{5} + 1/8 \cdot 2 \cdot 2 \cdot 2 \sqrt{5} + 1/5 \cdot 5 \sqrt{11}$$

$$3\sqrt{11} - 2\sqrt{5} + \sqrt{5} + \sqrt{11}$$

$$4\sqrt{11} - \sqrt{5}$$

d) $3\sqrt{128} + 7\sqrt{18} - 1/5\sqrt{98} - 1/3\sqrt{16}$

$$3\sqrt{(2^2 \cdot 2^2 \cdot 2^2 \cdot 2)} + 7\sqrt{(2 \cdot 3^2 \cdot 2)} - 1/5\sqrt{(2 \cdot 7^2 \cdot 2)} - 1/3\sqrt{(2^2 \cdot 2^2)}$$

$$3 \cdot 2 \cdot 2 \cdot 2 \sqrt{2} + 7 \cdot 3 \sqrt{2} - 1/5 \cdot 7 \sqrt{2} - 1/3 \cdot 2 \cdot 2$$

$$24\sqrt{2} + 21\sqrt{2} - 7/5\sqrt{2} - 4/3$$

$$218/5\sqrt{2} - 4/3$$

f) $(\sqrt{2} + \sqrt{3} + \sqrt{5})(\sqrt{2} - \sqrt{3})$

$$\frac{\sqrt{2} + \sqrt{3} + \sqrt{5}}{\sqrt{2} - \sqrt{3}}$$

$$\frac{2 + \sqrt{(3 \cdot 2)} + \sqrt{(2 \cdot 5)}}{3 - \sqrt{(3 \cdot 2)}} + \sqrt{(3 \cdot 5)}$$

$$\frac{5 + 0 + \sqrt{10} + \sqrt{15}}{5 + 0 + \sqrt{10} + \sqrt{15}}$$

$$5 + \sqrt{10} + \sqrt{15}$$

RESUELVA:

g) $(3\sqrt{X} - 2\sqrt{Y})(3\sqrt{X} - 2\sqrt{Y})$

h) $(\sqrt{3X} - \sqrt{2Y})(5\sqrt{3X} + 2\sqrt{2Y})$

j) $\frac{\sqrt{2X} - \sqrt{3Y} \cdot \sqrt{X} - \sqrt{Y}}{\sqrt{X} + \sqrt{Y} \cdot \sqrt{X} - \sqrt{Y}}$

$$\frac{\sqrt{2X} - \sqrt{3Y} \cdot \sqrt{X} - \sqrt{Y}}{\sqrt{X} + \sqrt{Y} \cdot \sqrt{X} - \sqrt{Y}}$$

$$\frac{X\sqrt{2} - \sqrt{(3XY)} - \sqrt{(2XY)} + Y\sqrt{3}}{X - Y}$$

l) $\frac{3\sqrt{5} + 5\sqrt{3}}{3\sqrt{5} - 5\sqrt{3}}$

$$\frac{3\sqrt{5} + 5\sqrt{3}}{3\sqrt{5} - 5\sqrt{3}} \cdot \frac{3\sqrt{5} + 5\sqrt{3}}{3\sqrt{5} + 5\sqrt{3}}$$

$$\frac{9(5) - 2 \cdot 3\sqrt{5} \cdot 5\sqrt{3} + 25(3)}{9(5) - 25(3)}$$

$$\frac{45 - 30\sqrt{5}\sqrt{3} + 75}{45 - 75}$$

$$\frac{120 - 30\sqrt{15}}{30} = \frac{30(4 - \sqrt{15})}{30} = 4 - \sqrt{15}$$

m) $14 - (5X - 1)(2X + 3) = 17 - (10X + 1)(X - 6)$

$$14 - 10X^2 - 13X + 3 = 17 - 10X^2 + 59X + 6$$

$$-13X - 59X = 17 + 6 - 14 - 3$$

$$-72X = 6$$

$$X = 6 / -72$$

$$X = -1/12$$

ñ) $(6X - 1) / 18 - 3(X + 2)(5X - 6) = (1 + 3X) / 9$

$$\frac{6X - 1}{18} - 3(X + 2)(5X - 6) = \frac{1 + 3X}{9} \quad \text{MCM} = 18$$

$$6X - 1 - 54(X + 2)(5X - 6) = 2(1 + 3X)$$

$$6X - 1 - 54(5X^2 + 4X - 12) = 2 + 6X$$

$$-1 - 270X^2 - 216X + 648 = 2 + 6X$$

$$-270X^2 - 222X + 645 = 0$$

$$270X^2 + 222X - 645 = 0$$

$$3(90X^2 + 74X - 215) = 0$$

Se continua la resolución como ecuación de 2º grado

q) $3X(X - 2) - (X - 6) = 23(X - 3)$

$$3X^2 - 6X - X + 6 = 23X - 69$$

$$3X^2 - 6X - X + 6 - 23X + 69 = 0$$

$$3X^2 - 30X + 75 = 0$$

$$3(X^2 - 10X + 25) = 0$$

$$3(X - 5)(X - 5) = 0$$

$$X = 5$$

r) $X / (x - 2) - (X - 2) / X = 5/2$

$$\frac{X}{(x - 2)} - \frac{(X - 2)}{X} = \frac{5}{2} \quad \text{mcm} = 2X(x - 2)$$

$$X(2X) - 2(x - 2)(X - 2) = 5X(X - 2)$$

$$2X^2 - 2X^2 + 8X + 8 = 5X^2 - 10X$$

$$0 = 5X^2 - 10X - 8X - 8$$

$$0 = (X - 4)(X + 2)$$

$$X = 4 \quad X = -2$$

n) $5X/4 - 3/17(X - 20) - (2X - 1) = (X + 24) / 34$

$$\frac{5X}{4} - \frac{3(X - 60)}{17} - (2X - 1) = \frac{(X + 24)}{34} \quad \text{MCM} = 68$$

$$17(5X) - 4(3X - 60) - 68(2X - 1) = 2(X + 24)$$

$$85X - 12X + 240 - 136X + 68 = 2X + 48$$

$$65X = -260$$

$$X = -260/65$$

$$X = -4$$

o) $5(1 - X)^2 - 6(X^2 - 3X - 7) = X(X - 3) - 2X(X + 5) - 2$

$$5 - 10X + 5X^2 - 6X^2 + 18X - 42 = X^2 - 3X - 2X^2 - 10X - 2$$

$$18X = -2 - 5 + 42$$

$$X = 35/18$$

p) $25(X + 2)^2 = (X + 7)^2 - 81$

$$25(X^2 + 4X + 4) = (X^2 + 14X + 49) - 81$$

$$25X^2 + 100X + 100 = X^2 + 14X + 49 - 81$$

$$25X^2 + 100X + 100 - X^2 - 14X - 49 + 81 = 0$$

$$24X^2 + 86X + 132 = 0 \quad \text{Se continua la resolución como ecuación de 2º grado}$$

RESOLVER

s) $4X^2 / (X - 1) - (1 - 3X) / 4 = 20X / 3$

t) $4X - 37X^2 + 9 = 0$

u) $X - 61X^2 + 900 = 0$

v) $9X - 40X^2 + 16 = 0$

w) $(X^2 - 6X)^2 - 2(X^2 - 6X) = 35$

x) $5 - \sqrt{3X + 1} = 0$

$6 = \sqrt{3X}$

$36 = 3X$

$36/3 = X$

$12 = X$

y) $\sqrt{9X^2 - 5} - 3X = -1$

$\sqrt{9X^2 - 5} = 3X - 1$

$9X^2 - 5 = 9X^2 - 6X + 1$

$-5 = -6X + 1$

$-5 - 1 = -6X$

$-6 = -6X$

$-6/-6 = X$

$1 = X$

z) $\sqrt{3X - 2} - \sqrt{X + 2} = 4$

$\sqrt{3X - 2} = 4 + \sqrt{X + 2}$

$3X - 2 = 16 + 8\sqrt{X + 2} + X + 2$

$3X - 2 - 16 - X - 2 = 8\sqrt{X + 2}$

$2X - 20 = 8\sqrt{X + 2}$

$4X^2 - 80X + 400 = 64(X + 2)$

$4X^2 - 80X + 400 = 64X + 128$

$4X^2 - 80X + 400 - 64X - 128 = 0$

$4X^2 - 144X + 272 = 0$

$4(X^2 - 36X + 68) = 0$

$4(X - 34)(X - 2) = 0$

$X = 34 \quad X = 2$

aa) $\sqrt{2X + 1} - \sqrt{X} = 1$

$\sqrt{2X + 1} = 1 + \sqrt{X}$

$2X + 1 = 1 + 2\sqrt{X} + X$

$2X - X = 2\sqrt{X}$

$X = 2\sqrt{X}$

$X^2 = 4X$

$X^2 - 4X = 0$

$X(X - 4) = 0$

$X = 0$

$X = 4$

bb) $(X + 2)(X - 1) + 26 < (X + 4)(X + 5)$

$X^2 + X - 2 + 26 < X^2 + 9X + 20$

$X - 9X < 20 + 2 - 26$

$-8X < -4$

$X > -4/-8$

$X > 1/2$

$R // (1/2, \infty)$

cc) $(2X + 1)/(3X - 1) > (2X + 5)/(3X + 2)$

$\frac{2X + 1}{3X - 1} > \frac{2X + 5}{3X + 2}$

$(3X + 2)(2X + 1) > (2X + 5)(3X - 1)$

$6x^2 + 7X + 2 > 6X^2 + 13X - 5$

$7X - 13X > -5 - 2$

$-6X > -7$

$X < -7/-6$

$X < 7/6$

$R // (-\infty, 7/6)$

dd) $(X + 3)/3 - 4/(X + 2) \geq X/3$

$\frac{X + 3}{3} - \frac{4}{X + 2} \geq \frac{X}{3}$

mcm = 3(X+2)

$(X + 2)(X + 3) - (3)4 \geq X(X + 2)$

$X^2 + 5X + 6 - 12 \geq X^2 + 2X$

$5X - 2X \geq 6$

$3X \geq 6$

$X \geq 6/3$

$X \geq 2$

$R // [2, \infty)$

RESOLVER

ee) $5/(3X + 1) - 20/(9X^2 - 1) < 2/(3X - 1)$

ff) $3X/2 + Y = 11 \quad \& \quad X + Y/2 = 7$

gg) $5X/12 - Y = 9 \quad \& \quad X - 3Y/4 = 15$

hh) $X/7 + Y/3 = 5 \quad \& \quad 3Y - X/14 = 26$

ii) $3X - (Y - 3)/5 = 6 \quad \& \quad 3Y - (X - 2)/7 = 9$