$2x^2 - 5x + 2 = 0$ $(Ax^2 + Bx + C = 0)$

$(x^2 + 2x) + 5 = (x^2 + 2x + 1) - 1 + 5$
$= (x+1)^2 + 4 = 0$

$(x^2 + 2(½)x + ¼) - ¼ + 3 =$

$3x^2 + 9x + 3 = 3(x^2 + 3x) + 3$
$= 3(x^2 + 2(3/2)x + 9/4 - 9/4) + 3$
$= 3(x^2 + 2(3/2)x + 9/4) - 27/4 + 3$
$= 3(x+3/2)^2 - 15/4 = 0$
$= (x+3/2)^2 - 5/4 = 0$
$= (x+3/2)^2 - (\text{sqrt}(5)/2)^2 = 0$
==> $(x+3/2 - \text{sqrt}(5)/2)(x+3/2 + \text{sqrt}(5)/2) = 0$
==> ….
==> $x = (-3+\text{sqrt}(5))/2$ v $x = (-3 - \text{sqrt}(5)) / 2$

Disc $= 9^2 - 4*3*3 = 81 - 36 = 45 > 0$

$x^2 + 3x + 1$ Disc $= 9 - 4 = 5 > 0$

Sol: $2x^2 - 5x + 2 = 0$ A=2 , B=-5, C=2
<==> $2(x^2 - 2(5/4)x) + 2 = 0$
<==> $2(x^2 - 5/2x + 25/16 - 25/16) + 2 = 0$
<==> $2(x^2 - 5/2x + 25/16 - 25/16) - 25/8 + 2 = 0$
<==> $2(x^2 - 5/2x + 25/16) - 25/8 + 16/8 = 0$
<==> $2(x-5/4)^2 - 9/8 = 0$ / * 1/2
<==> $(x-5/4)^2 - 9/16 = 0$
<==> $(x-5/4)^2 - (¾)^2 = 0$
<==> $(x-5/4 + ¾)(x-5/4 - ¾) = 0$
==> $x-2/4 = 0$ v $x - 8/4 = 0$
<==> $x = ½$ v $x = 2$

$x = -(-5) \pm \text{sqrt}(25-4*2*2) / (2*2)$
$x = 5 \pm \text{sqrt}(25-16) / 4$
$x = 5/4 \pm ¾$

Número racional sumado con su recíproco igual a 25/12

Sol: Sea x el número buscado; entonces la ecuación que representa el problema será

$x + 1/x = 25/12$

RESTRICCIÓN: x no puede ser cero.

<==> $x + 1/x = 25/12$ / *x
<==> $x^2 + 1 = (25/12)x$ / $- (25/12)x$
<==> $x^2 - (25/12)x + 1 = 0$

INFINITAS SOL: <==> $0 = 0$
NINGUNA SOL: <==> $0 = 3$
SOL ÚNICA <==> $x = 13$ v $x = -2$

Sol. Por Fórmula
==> Discriminante = $(25/12)^2 – 4*1*1 = 625/144 – 4 = 625/144 – 144*4/144 = 625/144 – 576/144 =$
==> Discriminante = 49/144 ==> sqrt(Discriminante) = 7/12

==> x = -(-25/12) ± (7/12) / (2*1)
==> x = [(25/12) ± (7/12)] / 2
==> x = 25/24 ± 7/24
==> x = (25+7)/24 = 32/24 = 4/3 v x= (25-7)/24 = 18/24 = 3/4

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EJERCICIOS AXIOMAS DE ORDEN

11) (a+b+c) ( bc + ca + ab) >= 9abc

9) $a^2 + b^2 >= 2ab$

(a+b+c) ( bc + ca + ab)
= abc + aca + aab + bbc + bca + bab + cbc + cca + cab
= abc + $\cancel{a^2c}$ + $a^2b$ + $\cancel{b^2c}$ + abc + $\cancel{ab^2}$ + $bc^2$ + $\cancel{ac^2}$ + abc
= 3abc + c($a^2 + b^2$) + a($b^2 + c^2$) + b($a^2 + c^2$)
>= 3abc + c*2ab + a*2bc + b*2ac
= 3abc + 2abc + 2abc + 2abc
= 9abc

Por lo tanto, (a+b+c)(bc+ca+ab) >= 9abc // .

19) $a^3 + b^3$ <= $a^2b + ab^2$ (ERROR DE DESIGUALDAD, ES AL REVÉS)

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

$a^3 + b^3 = (a+b) (a^2 – ab + b^2) = (a+b)(a^2 + b^2) – (a+b)ab >= (a+b)(2ab) – (a+b)ab = (a+b)ab = a^2b + ab^2$
Factorización presente en la guía!!!

Por lo tanto, $a^3 + b^3 >= a^2b + ab^2$

13) a>0 ==> $a^3 + 1/a^3 >= a + 1/a$

$a^3 + (1/a)^3 = (a+1/a) [a^2 – a(1/a) + (1/a)^2] = (a+1/a)(a^2 + (1/a)^2 – 1) >= (a+1/a)(2a(1/a) – 1)$
$= (a+1/a)(2-1) = a+1/a$

Por lo tanto, $a^3 + 1/a^3 >= a+1/a$