

$$x^2 - 2x - 15 = 4x \quad \text{If } x=1 \quad 1-2-15=4 \text{ but } -16+4$$

$$(x+3)(x-5) = 4x \quad \text{Then } (x+3)(x-5) + 4x = 0$$

$$(1+3)(1-5) + 4(1) = (4)(-4) + 4 = -20$$

$$x^2 - 2x - 15 = 4x$$

$$(x+3)(x-5) + 4x + 20 = 0$$

$$(-3)^2 - 2(-3) - 15 = 4(-3) = -12$$

$$(x+3)(x-5) - 4(x+5)$$

$$9+6-15=0$$

$$x+3=0 \quad x=-3 \quad x-5=0 \quad x=5 \quad x^2+2x-15=0$$

$$(x+2)(x+5) = x^2+5x+3x+10$$

$$(x+2)(x+5) = x^2+5x+3x+10$$

$$(x+2)(x+5) - 2\left(\frac{15}{2}\right)$$

$$x^2 - 2x - 15 = 4x$$

$$(x+2)(x+5) - 2\left(\frac{15}{2}\right) = 0$$

$$\frac{x}{2} - 2 - 15 = -16 \quad -16 = x(-16)$$

$$x^2+2x-2\left(\frac{15}{2}\right)x+4\left(\frac{15}{2}\right)$$

$$x^2 - 2x = x(x-2) = 0$$

$$(x+3)(x-5) + 4x = 0 \quad 4x=0 \quad x=0 \quad x^2+2x-15=0$$

$$x+2=0 \quad x=-2 \quad x-5=0 \quad x=5 \quad -2^2+2(-2)-15 = -9+(-4)-15 = -28$$

$$5^2+2(5)-15 = 25+10-15 = 20 \quad 0^2+2(0)-15 = -15$$

$$-3^2+2(-3)-15+4(-3) = 9+(-6)-15+(-12) = -24 \quad 0^2+2(0)-15+4(0) = -15$$

$$5^2+2(5)-15+4(5) = 25+10-15+20 = 40 \quad -3^2-2(3)-15 = -9-6-15 = -30$$

$$+5^2-2(5)-15 = 25-10-15 = 0 \quad x^2-2x-15 = -4x$$

$$(x+3)(x-5) + 4(x) = 0 \quad (5+3)(5-5) + 4(5) = 20 \neq 0$$

$$x^2-2x-15=0 \quad 5^2+2(5)-15=0, 20$$

$$1^2-2(1)-15 = -16, -12 \quad -1^2+2(-1)-15 = -16$$

$$2^2-2(2)-15 = -15, -7 \quad -2^2+2(-2)-15 = -15$$

$$3^2-2(3)-15 = -12, 0 \quad -3^2+2(3)-15 = -12$$

$$4^2-2(4)-15 = -7, 9 \quad -4^2+2(-4)-15 = -27$$

$$-5^2+2(-5)-15 = 0 \quad x = -5, 3$$

$$x^2+2x-15=0 \quad \text{If } x=-5, \text{ or } x=3$$

$$\text{Algebra check: } (x+3)(x-5) + 4x = (-5+3)(-5-5) + 4(-5) =$$

$$(-2)(-10) + (-20) = 20 - 20 = 0 \quad (x+3)(x-5) = (3+3)(3-5) +$$

$$4(3) = (6)(-2) + 12 = -12 + 12 = 0$$

$$\text{Completing square: } 2(x^2-2x-15) = (-4x) \quad 2(x^2-2x-15+4x)$$

$$x^2-2x-15+4x = x^2+2x-15 \rightarrow (x+3)(x+5)$$

$$b) x^2+3x=0 \quad x=-3 \quad c) x^2+18x+45=0$$

$$x(x+3)=0 \quad x=0 \quad (x+8)(x+15)=0$$

$$xx=0 \quad 3x=0 \quad 3+3(3)=9-9=0 \quad x^2+3x+15x+45=0$$

$$x=0 \quad x=3 \quad 5+3(5)=20 \quad x+3=0 \quad x=-3 \quad x=-15$$

$$x+15=0 \quad x=-15 \quad (-15)^2+18(-15)+45 = 0 \quad x^2+18x+45+45=0$$

$$(-3)^2+18(-3)+45 = 0 \quad x^2+18x+45+3x$$

$$(x+3)(x+15)+3x=0$$

$$x^2+21x+45 = 0$$

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