



PING YI SECONDARY SCHOOL

Perseverance Yields Success

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Class 302

Subject E-Math Ex 2.1 Pg 31

No. 20

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2a) $x^2 - 2x = 5x - 12$

$$x^2 - 2x - (5x - 12) = 0$$

$$x^2 - 7x + 12 = 0$$

$$(x - 3)(x - 4) = 0$$

$$(x - 3) = 0 \quad \text{or} \quad (x - 4) = 0$$

$$x - 3 = 0$$

$$x - 4 = 0$$

$$x = 3 \#$$

$$x = 4 \#$$

b) $x(x+11) = 5(x+5)$

$$x^2 + 11x = 2x + 10$$

$$x^2 + 11x - 2x - 10 = 0$$

$$x^2 + 9x - 10 = 0$$

$$(x - 1)(x + 10) = 0$$

$$(x - 1) = 0 \quad \text{or} \quad (x + 10) = 0$$

$$x = 1 \#$$

$$x = -10 \#$$

f) $(x+1)^2 = 9(x+1)$

$$x^2 + 2x + 1 = 9x + 9$$

$$x^2 + 2x + 1 - 9x - 9 = 0$$

$$x^2 - 7x - 8 = 0$$

$$(x - 8)(x + 1) = 0$$

$$(x - 8) = 0 \quad \text{or} \quad (x + 1) = 0$$

$$x = 8 \#$$

$$\text{or} \quad x = -1 \#$$

h) $2(3x+4)^2 - 5(3x+4) + 3 = 0$

$$2(9x^2 + 24x + 16) - 5(3x + 4) + 3 = 0$$

$$18x^2 + 48x + 32 - 15x - 20 + 3 = 0$$

$\Rightarrow 18x^2 + 33x + 15 = 0$

$$6x^2 + 11x + 5 = 0$$

$$(x + 1)(6x + 5) = 0$$

$$(x + 1) = 0 \quad \text{or} \quad (6x + 5) = 0$$

$$x = -1 \#$$

$$x = -\frac{5}{6} \#$$

$$\Rightarrow \text{Area of smaller square} = x \cdot x \\ = x^2$$

$$\text{Area of bigger square} = (x+3)(x+3) \\ = x^2 + 6x + 9$$

Forming the equation:

$$x^2 + x^2 + 6x + 9 = 269$$

$$x^2 + x^2 + 6x + 9 - 269 = 0$$

$$2x^2 + 6x - 260 = 0$$

$$x^2 + 3x - 130 = 0$$

$$(x+13)(x-10) = 0$$

$$x+13=0 \quad \text{or} \quad x-10=0$$

$$x=-13 \quad \text{or} \quad x=10 \#$$

(rejected)

$$4 \quad (x+2)^2 + (2x+3)^2 = (3x-1)^2$$

$$x^2 + 4x + 4 + 4x^2 + 12x + 9 = 9x^2 - 6x + 1$$

$$x^2 + 4x + 4 + 4x^2 + 12x + 9 - 9x^2 - 6x - 1 = 0$$

$$-4x^2 + 22x + 12 = 0$$

$$-2x^2 + 11x + 6 = 0$$

$$(-2x+1)(x+6) = 0$$

$$x = -\frac{1}{2} \quad \text{or} \quad x = 6$$

(rejected)