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ALHA 3000

Time: 3:20

03/11/20

Page 1

2) Solve the following linear equations for x

i) $15x - 2 = 12x + 9$

$$15x - 12x = 2 + 9$$

$$3x = 11$$

$$3x = 11$$

$$x = \frac{11}{3}$$

$$x = 3.6$$

ii) $3(7x - 1) = 6(x + 3)$

$$3 \times 7x = 21x, 3 \times -1 = -3$$

$$6 \times x = 6x, 6 \times 3 = 18$$

$$21x - 3 = 6x + 18$$

$$21x - 6x = 18 + 3$$

$$x = 15$$

iii) $\frac{5x+3}{4} = \frac{2x-1}{4}$

$$5x + 3 = 2x - 1$$

$$5x + 3 = 2x - 1, 3 - 1 = 2$$

$$3x = 2$$

$$5x + 3 \div 4 = 5.5, 3 - 1 \div 4 = 2.8$$

$$5.5x = 2.8$$

$$x = \frac{5.5}{2.8}$$

$$x = 1.964$$

Time: 3:40

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ACHA3000

03/11/20
Page 2

3) Solve the following quadratic equations by using the factoring method

$$i) x^2 + 10x + 21 = 0$$

$$(x+7)(x+3)$$
$$x^2 + 7x + 3x + 21$$
$$10x$$

$$7 \times 3 = 21$$
$$3+7 = 10$$

$$x+7=0 \quad x+3=0$$
$$x=-7 \quad x=-3$$

$$ii) x^2 - 3x + 2 = 0$$

$$(x-2)(x-1)$$

$$2 \times 1 = 2$$
$$2+1 = 3$$

$$x-2=0 \quad x-1=0$$
$$x=2 \quad x=1$$

$$iii) x^2 + 12x + 20 = 0$$
$$(x+10)(x+2)$$

$$10 \times 2 = 20$$
$$10+2 = 12$$

$$x+10=0 \quad x+2=0$$
$$x=-10 \quad x=-2$$

$$iv) x^2 - 64 = 0$$

$$64 \div 2 = 32$$

$$x+32=0$$

$$x=-32$$

5) Solve the following simultaneous equations

$$1) 25x + 3y = 39 \quad (1)$$

$$3x + 8y - 2y = 42 \quad (2)$$

$$10x + 6 = 78 \quad (3)$$

$$24x + 6 = 126 \quad (4)$$

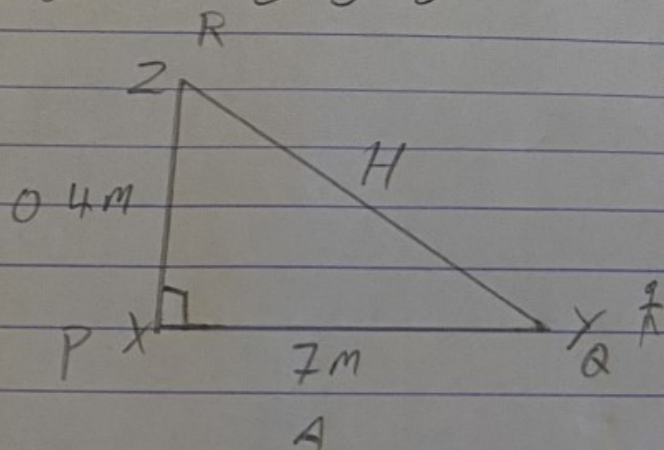
$$34x = 204$$

$$x = \frac{204}{34}$$

$$x = 6$$

7) In the following right angled triangle, if XZ is 4m and XY is 7m calculate:

- i) Angle Y
- ii) Angle Z
- iii) Length YZ using Pythagoras theorem



$$\cos Z = \frac{7}{4}$$

$$\cos Z = 0.4$$

$$Z = \cos^{-1}(0.4)$$

$$Z = 25.84^\circ$$

$$Y = 90 + 25.84 = 113.256$$

$$180 - 113.256 = 66.74$$

$$Y = 66.74$$