

2005231 JAY DELANCY

Module Code: ACHA 3000
Introduction to Maths and Science
July 18 2022 RESIT (MATHS)

1. Express the following as x to

(i) $x^2 \times x^3 \times x^4 \times x$
 $= x^{10}$

(ii) $(2x^3)^3 \times 3x^2$
 $8x^9 \times 3x^2$
ans = $24x^{11}$

(iii) $\frac{x^5 \times x^{12} \times x}{x^5}$
ans = x^{13}

(iv) $5\sqrt{x} \times 7\sqrt{x}$
 $5(x)^{1/2} \times 7(x)^{1/2}$
ans = $35x$

(v) 1

= ∞^0

(7mks)

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18/07/22

Q

~~2~~ (i)

Q 2.

$$(i) 9x - 2 = 4x + 3$$

$$5x = 3 + 2$$

$$5x = 5$$

$$x = 1$$

$$(ii) 12(x+3) = 5(2x-4)$$

$$\therefore 12x + 36 = 10x - 20$$

$$- 2x = -56$$

$$- \text{ans } x = -28$$

$$(iii) \frac{5}{(x+5)} = \frac{6}{(x-2)}$$

$$5(x-2) = 6(x+5) \quad 6x + 30$$

$$5x + 11 \quad -x = 40$$

$$5x - 11 =$$

$$x = -40$$

$$(iv) (x+3)^2 = (x+7)(x+3)$$

$$x^2 + 6x + 9 = \quad (14 \text{ mks})$$

$$x^2 + 6x + 9 = x^2 + 3x + 7x + 21$$

$$-4x = 12$$

$$x = -3$$

Q3. (i) $x^2 + 7x + 10 = 0$

$$x^2 + 7x + 10 = 0$$

$$x(x+2) + 5(x+2) = 0$$

$$(x+2)(x+5) = 0$$

$$x = -2$$

(ii) $x^2 - 8x + 15 = 0$

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

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

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

$$x = 3$$

$$(iii) x^2 + 7x + 6 = 0$$

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

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

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

$$x = -1$$

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

$$x^2 = 64$$

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

$$x = -8$$

$$x = 8$$

ans

(16 mks)

$$(v) 2x^2 - 3x - 20 = 0$$

$$2x^2 + 4x + x - 20 = 0$$

$$2x(x+2) + (x-20) = 0$$

$$(x+2)(2x-10) = 0$$

$$x = -2$$

$$(V) 2x^2 + 5x + 2 = 0$$

$$2x^2 + 4x + x + 2 = 0$$

$$2x(x+2) + (x+2) = 0$$

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

$$x = -2, -\frac{1}{2}$$

Q4.

$$11x^2 + 5x - 14 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-5 \pm \sqrt{25 + 616}}{22}$$

$$x = \frac{-5 \pm 25.31}{22}$$

$$x = \frac{-5 + 25.31}{22}$$

$$= \frac{20.31}{22}$$

$$x = \frac{5 - 25.31}{22}$$

$$x = -\frac{30.31}{22}$$

Q6 (i) $8x^3y^2 - 4x^2y + 2x^3y^4$

(i) $8x^3y^2 - 4x^2y + 2x^3y^4$

$$(8x(x^3) \times (y^2) - (4x(x^2))xy + (2x^3 \times (2x^3xy^4)))$$

$$(8x(x^3) \times (y^2) - (2^2x^2 \times y) + 2x^3y^4)$$

$$(2^3x^3 \times y^2) - 2^2x^2y^2 + 2x^3y^4$$

Factorizing $xy^3 + 4xy - 2$

$$2x^2y \times (xy^3 + 4xy - 2)$$

(ii) $5x^2y^2 + 10xy^2$

$$5x^2y^2 + 10xy^2$$

$$5x^2xy^2 + 10xxy^2$$

$$5x^2xy^2 + 10xxy^2$$

$$5x^2y^2 + 10xy^2$$

$$5xy^2(x+2)$$

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Q5

~~Q. (i) $2x^3y^2 - 4x^2y + 2x^3y^4$~~

$$2x + 3y = 17 \quad (1)$$

$$4x - 5y = 21 \quad (2)$$

Multiply (1) by 2

~~2m~~ $2x + 3y$

$$4x + 6y = 34 \quad (1)$$

$$4x - 5y = 21 \quad (2)$$

$$\begin{array}{r} + \quad + \\ \hline \end{array}$$

$$11y = 55$$

$$y = 5$$

put y in equation (1)

$$2x + 15 = 17$$

$$2x = 2$$

$$x = 1$$

$$x = 1$$

$$y = 5$$

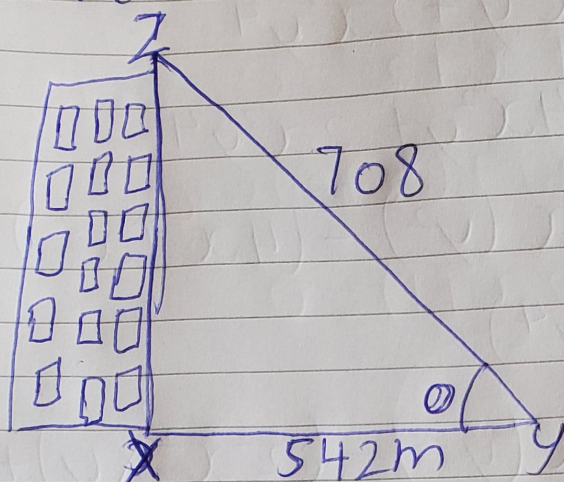
(5mks)

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Q7

Given



$$ZY = 708 \text{ m}$$

$$XY = 542 \text{ m}$$

$$(i) (ZY)^2 = (XY)^2 + (ZX)^2$$

$$(ZX)^2 = (ZY)^2 - (XY)^2$$

$$(ZX)^2 = (708)^2 - (542)^2$$

$$(ZX)^2 = 501,264 - 293,764$$

$$(ZX)^2 = 207,500$$

$$ZX = 455.5 \text{ m}$$

$$(ii) \sin \theta = \frac{p}{H} = \frac{ZX}{ZY}$$

$$\sin \theta = \frac{455.5}{708} = 0.6433$$

$$\theta = \sin^{-1}(0.6433)$$

$$\theta = 40^\circ$$