

Student ID = 2005231

01/11/21

Model Code: ACHA3000

Introduction To Maths and Science

ACHA3000

$$y = 3x + 4$$

(1) Express the following ~~as to~~ as x to a power

(a) $x^6 \cdot x x^8 x^2 \cdot x$

$$\begin{matrix} (&) & (&) \\ x^6 & x & x^8 & x^2 & x & x \end{matrix} = x$$

$$= x^{6+1+8+2+1+1}$$

(i) ~~$(2x^2) \times 3x^3$~~
 $= x^6 = x^{19} \leftarrow$

(ii) ~~$(2x^2)^4 \times 3x^3$~~

$$= (2x^2)$$

$$\leftarrow 2^4 x^{8+6}$$

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2. (i) $7x - 1 = 5x + 4$

~~$(x - x)$~~
 $7x = 5x + 5$

$$7x - 5x = 5x - 5x$$

$$2x = 5$$

$$\frac{2x}{2} = \frac{5}{2}$$

$$x = \frac{5}{2}$$

(ii) $30x + 20 = 14x - 7$
 $= 20$

$$30x = -14x - 27$$

$$30x + 14x = -14x - 27$$
$$+ 14x$$

$$= \frac{44x}{44} = \frac{-27}{44}$$

i. (iii)

$$\frac{2x+1}{x-1} = 4$$

$$3(x-1) = (2x+1)$$

$$(2x+1) \quad 4: 8x+4$$

$$3x - 3 = 8x + 4$$

$$x = \frac{7}{5}$$

iv. $x^2 + 4x + 4 = x^2 + 18x$
 $+ 15$

$$x^2 + 4x = x^2 + 8x + 11$$

$$x^2 + 4x - (x^2 + 8x) = x^2 + 8x + 11 - (x^2 + 8x)$$

$$x = -\frac{11}{4}$$

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3. Solve the following quadratic equations by using the factorization

(i) $x^2 + 9x + 14 = 0$

$$\sqrt{9^2 - 4 \cdot 1 \cdot 14} = 5$$

$$x_1 = \frac{-9+5}{2 \cdot 1}, x_2 = \frac{-9-5}{2 \cdot 1}$$

$$x = \frac{-9+5}{2 \cdot 1} = -2$$

$$x = \frac{-9-5}{2 \cdot 1} = -7$$

(ii) $x^2 + 9x + 14 = 0$

$$x_{1,2} =$$

$$x_{1,2} = \frac{-9 \pm \sqrt{9^2 - 4 \cdot 1 \cdot 14}}{2 \cdot 1}$$

$$\sqrt{9^2 - 4 \cdot 1 \cdot 14} = 5$$

$$x_{1,2} = \frac{9 \pm 5}{2 \cdot 1}$$

(iii) $x^2 + 8x - 20 = 0$

$$x^2 + 8x - 20$$

$$= (x^2 - 2x) + (10x - 20)$$

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

(iv) $x^2 - 49 = 0$

$$x^2 - 49 + 49 = 0 + 49$$

$$x^2 = 49$$

$$x = 7, x = -7$$

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

$$x = \frac{5}{2}, x = 4$$

$$(4) 17x^2 = 5x + 14$$

$$17x^2 - 14 = 5x$$

$$17x^2 - 14 = 5x$$

$$17x^2 - 14 - 5x = 5x - 5x$$

$$17x^2 - 5x - 14 = 0$$

$$5. \quad 6x + 5y = 35$$

$$6x + 5y - 5y = 35 - 5y$$

$$6x = 35 - 5y$$

$$6x \quad 35 \quad 5y$$

$$7x - 4y = 31$$

$$7x - 4y + 4y = 31 + 4y$$

$$7x = 31 + 4y$$

$$= \frac{31 + 4y}{7}$$

7. ~~2~~ 700 The Height is 250

(ii) Angle is 700