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Maths Exam - ACHH3000

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$$4 \quad 17x^2 = -5x + 14$$

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

$$x = \frac{-5 \pm \sqrt{5^2 - (4 \times 17 \times -14)}}{34}$$

$$x = 0.7723$$

$$x = -1.0664$$

$$5 \quad \begin{aligned} 6x + 5y &= 35 \\ 7x - 4y &= 31 \end{aligned}$$

$$\begin{aligned} 42x + 35y &= 245 \\ 42x + 28y &= 186 \end{aligned}$$

$$\begin{aligned} y &= 1 \\ x &= 5 \end{aligned}$$

$$6.ii) 10p^3q^2 - 5p^2q + 15p^4q$$

$$5p^2q(2pq - 1 + 3p^2)$$

$$7.ii) 2x^2y - 4xy^2$$

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2. ii) ~~10x~~

$$10(3x+2) \Rightarrow (-2x-1)$$

$$\begin{array}{r} 30x+20 = -14x-7 \\ +14x \quad \quad +14x \end{array}$$

$$\begin{array}{r} 44x+20 = -7 \\ +7 \quad \quad +7 \end{array}$$

$$\begin{array}{r} 44x+27 = 0 \\ -27 \quad -27 \end{array}$$

$$\begin{array}{r} 44x = -27 \\ x = \frac{-27}{44} \end{array}$$

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

$$\text{iv) } \frac{(x+2)^2}{(x+2)(x+2)} = \frac{(x+3)(x+5)}{(x+3)(x+5)}$$

$$x^2 + 2x + 2x + 4$$

$$x^2 + 4x + 4$$

$$x^2 + 5x + 3x + 15$$

$$x^2 + 8x + 15$$

$$4x + 4 = 8x + 15$$

$$-4x$$

$$-4x$$

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$$7. i) \sqrt{700^2 - 550^2} = 433.013 \text{ m}$$

$$ii) \cos^{-1} (550 \div 700) = 38.21^\circ$$

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3. i) $x^2 + 9x + 14 = 0$

$$(x+2)(x+7) = 0$$

$$\underline{x = -2} \quad \underline{x = -7}$$

ii) $x^2 - 7x + 10 = 0$

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

$$x^2 - 5x - 2x + 10$$

$$x^2 - 7x + 10$$

$$\underline{\cancel{x-2}} \quad \underline{x+5}$$

$$x = +2$$

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

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

$$\underline{x = -10} \quad \underline{\cancel{x+2}}$$

$$x = +2$$

iv) $x^2 - 49 = 0$

$$(x+7)(x-7) = 0$$

$$\underline{x = -7} \quad \underline{x = +7}$$

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1. i) $x^6 \times x^0 \times x^2 \times x =$
 x^{17}

ii) ~~$(2x^2)^4$~~ $(2x^2)^4 \times 3x^3$
 ~~$16x^8$~~
 $16x^8 \times 3x^3$
 $= 48x^{11}$

iii) $\frac{x^2 \times x^{10} \times x}{x^3}$
 $\frac{x^{13}}{x^3}$
 $= 4x^{10}$

iv) $2\sqrt{x} \times 3\sqrt{x}$
 $x^{\frac{1}{2}} \times x^{\frac{1}{2}}$
 $= x^{\frac{5}{6}}$

v) 1
 $= x^0$

2. i) $7x - 1 = 5x + 4$
 $\pi \quad \pi$

$7x = 5x + 5$
 $-5x \quad -5x$

$2x = 5$