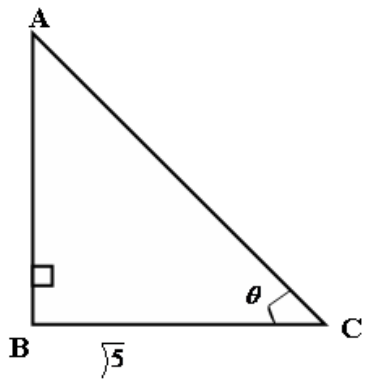
2. *Surds*

1.	 BC= $\sqrt{5^2+1^2}$ = $\sqrt{6}$ Sin (90 - θ) $\frac{\sqrt{5}}{\sqrt{6}}$	**B1** **B1** **B1**	
		02	

1.. $\frac{3}{\sqrt{7}-2} + \frac{1}{\sqrt{7}} = \frac{3\sqrt{7}+2}{\sqrt{7}-4} + \frac{\sqrt{7}}{\sqrt{7}}$

$\frac{3}{\sqrt{7}-2} + \frac{1}{\sqrt{7}} = \frac{3\sqrt{7}+7-2)}{7-2\sqrt{7}}$

$3\sqrt{7} + (7-2)$

$7 - 2\sqrt{7}$

$= \frac{3\sqrt{7}+7-2\sqrt{7}+2\sqrt{7}}{7-2\sqrt{7}\ 7+2\sqrt{7}}$

$= \frac{49-28}{(3\sqrt{7}+7-2)(7+2\sqrt{7}}$

$= \frac{21}{(4\sqrt{7}-2)\sqrt{7}+2\sqrt{7}}$

$= \frac{21}{}$

2.

$$\frac{2+\sqrt{5}}{2-\sqrt{5}} - \frac{3+\sqrt{5}}{2+\sqrt{5}} = a + b\sqrt{5}$$

$\frac{4+4\sqrt{5}+5-(6-3\sqrt{5}+2\sqrt{5}-5)}{4-5}$

$\frac{8+5\sqrt{5}}{-1}$

$a = -8 \quad b = -5$

3. $\frac{\sqrt{14}(\sqrt{7}+\sqrt{2})-\sqrt{14}(\sqrt{7}-\sqrt{12})}{7-12}$

$\sqrt{\quad}\ \sqrt{\quad}\ \sqrt{\quad}\ \sqrt{\quad}\ \sqrt{\quad}\ \sqrt{\quad}\ \sqrt{\quad}$

$$\frac{14\sqrt{7} + 14.\quad 12 - 14 . 7 + 14 . 12}{-5}$$

4.

$$(\sqrt{2}-1)^2 = 2\sqrt{2}\ 2 + 1 - 3\ 2\ \ 2$$

$$(\sqrt{2}-1)^3 = 2 - 1(3\sqrt{-2}\ \ 2$$

$$= 5\sqrt{2} - 7$$

$$\frac{2-\sqrt{2}}{5\sqrt{2-7}} \times \frac{5\sqrt{2}+7}{5\ \ 2\sqrt{7}\ \ 1} = 2\sqrt{2}+7) - 2\sqrt{2}+2)$$

$$= 17\sqrt{2-6} \quad = -6+17\sqrt{2}$$

5. $(2-3)(3+2)$

$3(2)2 - 2)2$

$3x2 - 3 + 2 - 2$

$9x2 - 4x3$

$6 - 3 + 2 - 6$

$18 - 12 = 6$

6. i) $Or = \quad 16^2 - 5^2$

$$= \sqrt{256 - 25}$$

$$= 15.198 \text{ cm}$$

ii) $\tan\theta = \frac{5.066}{4} = 1.2665$

$$\therefore \theta\ 51.71^0$$

7. $\text{Log}_{10}5 - \log_{10}10^2 + \log_{10}(2y+10) = \log_{10}(y-4)$

$$\text{Log}_{10}\{5\frac{(2y+10)}{10^2}\} = \log_{10}(y-4)$$

$10y + 50 = 100y - 400$

$90y = 450$

$y = 5$

8. $$\frac{\sqrt{3} - \sqrt{2}\quad \sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}\ (\quad\quad)}$$

$$= \frac{3 - \sqrt{6} - \sqrt{6} + 2}{3 - \sqrt{6} + \sqrt{6} - 2}$$

$$= \frac{5 - 2\sqrt{6}}{3-2}$$

$$= 5 - 2\sqrt{6}$$