N5 Homework Surds

1. a) $\sqrt{147} - 5\sqrt{3}$

$= \sqrt{49} \times \sqrt{3} - 5\sqrt{3}$

$= 7\sqrt{3} - 5\sqrt{3}$ ✓

$= 2\sqrt{3}$ ✓

b) $\sqrt{2}(\sqrt{3} + \sqrt{2}) - \sqrt{6}$

$= \sqrt{6} + \sqrt{4} - \sqrt{6}$ ✓

$= 2$ ✓

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2. $2\sqrt{5} + \sqrt{20} - \sqrt{45}$

$= 2\sqrt{5} + \sqrt{4} \times \sqrt{5} - \sqrt{9} \times \sqrt{5}$

$= 2\sqrt{5} + 2\sqrt{5} - 3\sqrt{5}$ ✓

$= \sqrt{5}$ ✓

/2

3. $\dfrac{5}{2\sqrt{3}} \times \dfrac{\sqrt{3}}{\sqrt{3}}$ ✓

$= \dfrac{5\sqrt{3}}{2\sqrt{9}}$

$= \dfrac{5\sqrt{3}}{2 \times 3}$

$= \dfrac{5\sqrt{3}}{6}$ ✓

/2

4. $\dfrac{5}{4 - \sqrt{3}} \times \dfrac{4 + \sqrt{3}}{4 + \sqrt{3}}$ ✓

$= \dfrac{5(4 + \sqrt{3})}{(4 - \sqrt{3})(4 + \sqrt{3})}$ ✓

$= \dfrac{5(4 + \sqrt{3})}{16 + 4\sqrt{3} - 4\sqrt{3} - \sqrt{9}}$

$= \dfrac{5(4 + \sqrt{3})}{16 - 3}$

$= \dfrac{5(4 + \sqrt{3})}{13}$ ✓

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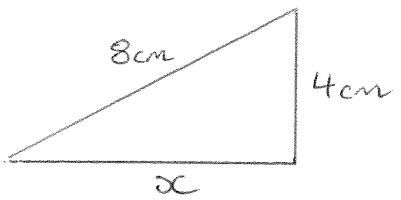
5. a)



$x^2 = 8^2 - 4^2$ ✓

$= 64 - 16$

$= 48$ ✓

$x = \sqrt{48}$

$= \sqrt{16} \times \sqrt{3}$

$= 4\sqrt{3}$ cm ✓

b) $A = \frac{1}{2}bh$

$= \frac{1}{2} \times 4\sqrt{3} \times 4$ ✓

$= 8\sqrt{3}$ cm^2 ✓

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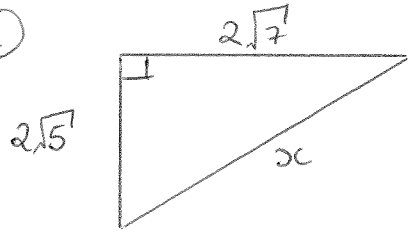
6.



$x^2 = (2\sqrt{5})^2 + (2\sqrt{7})^2$ ✓

$= 4\sqrt{25} + 4\sqrt{49}$ ✓

$= 4 \times 5 + 4 \times 7$

$= 20 + 28$

$= 48$ ✓

$x = \sqrt{48}$

$= \sqrt{16} \times \sqrt{3}$

$= 4\sqrt{3}$ units ✓

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Total /20