



Surds Exam Questions (from OCR 4721)

Note: It is likely that these questions will appear as a “show that”. You should therefore practice these without the use of a calculator in order to obtain full marks.

Q1, (OCR Jan 2007, Q1)

Express $\frac{5}{2 - \sqrt{3}}$ in the form $a + b\sqrt{3}$, where a and b are integers. [3]

Q2, (Jan 2009, Q1)

Express $\sqrt{45} + \frac{20}{\sqrt{5}}$ in the form $k\sqrt{5}$, where k is an integer. [3]

Q3, (Jun 2009, Q2)

Express $\frac{8 + \sqrt{7}}{2 + \sqrt{7}}$ in the form $a + b\sqrt{7}$, where a and b are integers. [4]

Q4, (Jun 2010, Q3)

(i) Express $\frac{12}{3 + \sqrt{5}}$ in the form $a - b\sqrt{5}$, where a and b are positive integers. [3]

(ii) Express $\sqrt{18} - \sqrt{2}$ in simplified surd form. [2]

Q5, (Jun 2011, Q5)

(i) Express $\sqrt{300} - \sqrt{48}$ in the form $k\sqrt{3}$, where k is an integer. [3]

(ii) Express $\frac{15 + \sqrt{40}}{\sqrt{5}}$ in the form $a\sqrt{5} + b\sqrt{2}$, where a and b are integers. [3]

Q6, (Jan 2012, Q1)

Express $\frac{15 + \sqrt{3}}{3 - \sqrt{3}}$ in the form $a + b\sqrt{3}$, where a and b are integers. [4]

Q7, (Jun 2016, Q2)

Express $\frac{3 + \sqrt{20}}{3 + \sqrt{5}}$ in the form $a + b\sqrt{5}$. [4]
