

a Simplify $2\sqrt{3} \times 4\sqrt{6}$ $24\sqrt{2}$ multiply, then simplify	b Expand and simplify $\sqrt{3}(2\sqrt{6} + \sqrt{3})$ $3 + 6\sqrt{2}$ a bracket of two surds	c Expand and simplify $(3 + \sqrt{2})(1 + 2\sqrt{2})$ $7 + 7\sqrt{2}$ two brackets with coefficients	d Expand and simplify $(2\sqrt{3} + 1)^2$ $13 + 4\sqrt{3}$ squaring a bracket with a coefficient
e Write $\frac{6}{\sqrt{5} + 1}$ with a rational denominator $\frac{3\sqrt{5} - 3}{2}$ the conjugate of a sum	f Write $\frac{1}{\sqrt{5} - \sqrt{3}}$ with a rational denominator $\frac{\sqrt{5} + \sqrt{3}}{2}$ two surds underneath	g Write $\frac{2\sqrt{3} - 1}{\sqrt{3} + 2}$ in the form $a + b\sqrt{3}$ $-8 + 5\sqrt{3}$ rationalise a two term top	h Solve $x\sqrt{2} = x + 3$. Give x with a rational denominator. $x = 3 + 3\sqrt{2}$ an equation with a surd coefficient
i Solve $x^2 - 4x - 1 = 0$. Give the positive answer exactly. $x = 2 + \sqrt{5}$ an exact solution of a quadratic	j $(a + \sqrt{b})^2 = 11 + 4\sqrt{7}$. Find the whole numbers a and b . $a = 2, b = 7$ working back from an expansion	k Work out $\frac{1}{\sqrt{2} + 1} + \frac{1}{\sqrt{3} + \sqrt{2}} + \frac{1}{2 + \sqrt{3}}$ 1 rationalise each, then collect	l Write $\frac{1}{1 + \sqrt{2} + \sqrt{3}}$ with a rational denominator $\frac{2 + \sqrt{2} - \sqrt{6}}{4}$ three terms underneath

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