

Question	Scheme	Marks	AOs
3	$\frac{4-\sqrt{6}}{5\sqrt{2}+4\sqrt{3}} \times \frac{5\sqrt{2}-4\sqrt{3}}{5\sqrt{2}-4\sqrt{3}} = \frac{20\sqrt{2}-16\sqrt{3}-5\sqrt{12}+4\sqrt{18}}{50-48}$	M1	2.1
	$\frac{32\sqrt{2}-26\sqrt{3}}{2}$	dM1	1.1b
	$16\sqrt{2}-13\sqrt{3}$	A1	1.1b
		(3)	
Alt 3	$4-\sqrt{6} = \dots a + \dots b + (\dots a + \dots b)\sqrt{6}$	M1	2.1
	$4 = 10a + 12b \text{ and } -1 = 4a + 5b \Rightarrow a = \dots \text{ or } b = \dots$	dM1	1.1b
	$16\sqrt{2}-13\sqrt{3}$	A1	1.1b

(3 marks)

Notes

M1: Multiplies the numerator and denominator by $5\sqrt{2}-4\sqrt{3}$ (or a multiple of this) and proceeds to $\frac{\dots}{50-48}$ or $\frac{\dots}{2}$ or $\frac{20\sqrt{2}-16\sqrt{3}-5\sqrt{12}+4\sqrt{18}}{\dots}$ condoning slips when multiplying out including signs.

dM1: Attempts to simplify their fraction so that all the terms on the numerator are in terms of $\sqrt{2}$ or $\sqrt{3}$. E.g. $\frac{32\sqrt{2}-26\sqrt{3}}{2}$. Do not allow this mark for proceeding straight to the final answer.

Note that if they proceed straight to $\frac{32\sqrt{2}-26\sqrt{3}}{2}$ with no other working seen then this scores M1dM0A0 as they have not attempted to simplify their fraction (i.e., we have not seen terms that they have tried to collect)

A1: $16\sqrt{2}-13\sqrt{3}$

Alternative method

M1: Multiplies both sides by $5\sqrt{2}+4\sqrt{3}$ and proceeds to $4-\sqrt{6} = \dots a + \dots b + (\dots a + \dots b)\sqrt{6}$ which may be unsimplified.

(The correct equation is $4-\sqrt{6} = 10a+12b+(4a+5b)\sqrt{6}$)

dM1: Attempts to form two simultaneous equations by equating coefficients using their equation and proceeds to find a value for a or b (condoning slips).

e.g. $4 = 10a + 12b$ and $-1 = 4a + 5b \Rightarrow a = \dots$ or $b = \dots$ which may be unsimplified

A1: $16\sqrt{2}-13\sqrt{3}$