Q	Marking instructions	AO	Mark	Typical solution
7(a)(i)	Identifies the error lies in step 1 without contradiction.	2.3	E1	Mistake is $\frac{1}{a}+\frac{1}{b}=\frac{2}{a+b}$
	Subtotal		**1**	
7(a)(ii)	Recalls correct addition Accept $\frac{b}{ab}+\frac{a}{ab}$	1.1b	M1	$\frac{1}{a}+\frac{1}{b}=\frac{a+b}{ab}$ a + b is rational and ab is rational and therefore $\frac{1}{a}+\frac{1}{b}$ is rational.
	Completes rigorous argument to complete proof. Must state that ab is rational (and non-zero) and $a+b$ is rational and conclude that $\frac{1}{a}+\frac{1}{b}$ or $\frac{a+b}{ab}$ is rational	2.1	R1	
	Subtotal		**2**	
7(b)	States assumption to begin proof by contradiction may PI by $\frac{a}{b}-x=\frac{c}{d}$ *or* $x-\frac{a}{b}=\frac{c}{d}$	3.1a	M1	Assume that the difference between a rational and an irrational number is rational. $\frac{a}{b}-x=\frac{c}{d}$
	Uses language and notation correctly to state initial assumptions: States their a,b,c and d are integers **and** x is irrational do not accept the irrational written as a fraction Condone missing $b,d\neq 0$	2.5	A1	Where a,b,c and d are integers, $b,d\neq 0$ and x is irrational
	Demonstrates that x can be expressed as a rational number by obtaining $x=\frac{ad-cb}{bd}$ OE	1.1b	M1	$x=\frac{a}{b}-\frac{c}{d}$ $=\frac{ad}{bd}-\frac{cb}{bd}$ $=\frac{ad-cb}{bd}$
	Completes rigorous argument to prove the required result, clearly explaining where the contradiction lies with **ALL** assumptions correct at the start (including $b,d\neq 0$)	2.1	R1	Hence x is rational. This is a contradiction hence the difference of any rational number and any irrational number is irrational.
	Subtotal		**4**	
	Question Total		**7**	