Q	Marking instructions	AO	Marks	Typical solution
11(a)	Obtains $400p+70$	1.1b	B1	$400p+70$
	Subtotal		**1**	

Q	Marking instructions	AO	Marks	Typical solution
11(b)(i)	Substitutes 382 **or** their u_2 into $u_3 = pu_2 + 70$	1.1a	M1	$382 = pu_2 + 70$ $382 = p(400p+70)+70$ $382 = 400p^2 + 70p + 70$ $400p^2 + 70p - 312 = 0$ $200p^2 + 35p - 156 = 0$
	Substitutes 382 **and** their u_2 into $u_3 = pu_2 + 70$ To obtain a quadratic equation in p PI by $382 = p(400p+70)+70$	3.1a	M1	
	Obtains correct equation and rearranges to obtain given answer. Must see brackets expanded before given answer.	2.1	R1	
	Subtotal		**3**	

Q	Marking instructions	AO	Marks	Typical solution
11(b)(ii)	Obtains both $p = 0.8$ and -0.975 PI by correct $u_4 = 375.6$ **and** $u_5 = 370.48$	1.1b	B1	$p = 0.8,\ p = -0.975$ $p = -0.975$ $\Rightarrow u_4 = -302.45,\ u_5 = 364.88875$ not decreasing $p = 0.8$ $\Rightarrow u_4 = 375.6,\ u_5 = 370.48$
	Uses $p = 0.8$ or -0.975 to obtain a value for u_4 PI by $375.6,\ -302.45, 370.48$ Accept equivalent fractions or AWRT 364.89	3.1a	M1	
	Deduces correct values for u_4 and u_5. $(u_4 =)375.6$ and $(u_5 =)370.48$ Accept equivalent fractions If incorrect values are seen they must be rejected.	2.2a	R1	
	Subtotal		**3**	

Q	Marking instructions	AO	Marks	Typical solution
11(c)(i)	Forms the equation $L = pL + 70$ or $(1-p)L = 70$ Or with $p = 0.8$ or -0.975 substituted into either of these equations accept if $1-p$ is evaluated ISW	3.1a	B1	$L = 0.8L + 70$
	Subtotal		**1**	

Q	Marking instructions	AO	Marks	Typical solution
11(c)(ii)	Deduces the value of L is 350 or AWRT 35.4 Accept $\frac{2800}{79}$ or both	2.2a	R1	350
	Subtotal		**1**	

	Question 11 Total		**9**	