Question Number	Scheme	Marks
2 (a)	$\dfrac{3r+1}{r(r-1)(r+1)}=\dfrac{A}{r}+\dfrac{B}{r-1}+\dfrac{C}{r+1}$	
	$\dfrac{3r+1}{r(r-1)(r+1)}=-\dfrac{1}{r}+\dfrac{2}{r-1}-\dfrac{1}{r+1}$	M1A1 (2)
(b)	$\dfrac{2}{1}-\dfrac{1}{2}-\dfrac{1}{3}$ $\quad\dfrac{2}{n-3}-\dfrac{1}{n-2}-\dfrac{1}{n-1}$ $\dfrac{2}{2}-\dfrac{1}{3}-\dfrac{1}{4}$ $\quad\dfrac{2}{n-2}-\dfrac{1}{n-1}-\dfrac{1}{n}$ $\dfrac{2}{3}-\dfrac{1}{4}-\dfrac{1}{5}$ $\quad\dfrac{2}{n-1}-\dfrac{1}{n}-\dfrac{1}{n+1}$ $\dfrac{2}{4}-\dfrac{1}{5}-\dfrac{1}{6}$	M1
	$=2-\dfrac{1}{2}+\dfrac{2}{2}-\dfrac{1}{n}-\dfrac{1}{n}-\dfrac{1}{n+1}$	dM1A1
	$\dfrac{5}{2}-\dfrac{2}{n}-\dfrac{1}{n+1}=\dfrac{5n(n+1)-4(n+1)-2n}{2n(n+1)}, =\dfrac{5n^2-n-4}{2n(n+1)}$	M1, A1 cso (5)
(c)	$\sum_{2}^{20}-\sum_{2}^{14}$	
	$=\dfrac{5\times20^2-20-4}{2\times20\times21}-\dfrac{5\times14^2-14-4}{2\times14\times15}$	M1
	$=\dfrac{13}{210}$	A1 (2)
		[9]

(a)	
M1	Correct method for obtaining the PFs
A1	Correct PFs
(b)	
M1	Show sufficient terms at both ends (eg 3 at start and 2 at end) to demonstrate the cancelling. (This can be implied by correct work at the next line) Must be using PFs of the correct form and start at $r = 2$ unless extra terms are ignored at next stage. Can be split into $\sum\left(\dfrac{1}{r-1}-\dfrac{1}{r}\right)+\sum\left(\dfrac{1}{r-1}-\dfrac{1}{r+1}\right)$
dM1	Extract the non-cancelled terms (min 4 correct terms but 5/2 counts as 3 correct) Depends on first M of (b)
A1	Correct terms extracted
M1	Write terms using the common denominator, numerator need not be simplified. Must start with a min of 3 terms inc terms with denominators n and $(n+1)$
A1cso	Correct answer from correct working
(c)	
M1	Form and use the difference of the 2 summations shown using their result from (b) or an earlier form seen in (b)
A1	Correct **exact** answer, as shown or equivalent