

**P.O.C.A. WONG SIU CHING SECONDARY SCHOOL**  
**PURE MATHEMATICS**  
**ALGEBRA : PARTIAL FRACTIONS**  
**ASSIGNMENT 8**

Date	Name	Grade / Score
		<b>/15</b>

1. (a) Express  $\frac{x^2-3x-2}{x^2(x+1)^2}$  into partial fractions.

(8 marks)

(b) Hence evaluate  $\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{k^2 - 3k - 2}{k^2(k+1)^2}$ .

2. (a) Express  $\frac{x^{n-1}}{(x+1)(x+2)\cdots(x+n)}$  into partial fractions.

(7 marks)

(b) Evaluate  $\sum_{r=1}^n \frac{(-1)^{r-1} r^{n-1}}{r!(n-r)!}$ , for  $n \geq 2$ .