

ANSWERS TO SEMESTER ONE EXAMINATION JUNE 2008 (JANUARY 2008 INTAKE)

1	$\frac{1}{3r+2} - \frac{1}{3r+5} ; \frac{2n}{5(3n+5)}$
2	$8u^4 - 9u^3 - 73u^2 - 295u + 1017$
3	a_n is divisible by 19.
4	<p>When $k = -1$, the solution is : $x = -s ; y = 0 ; z = s$, $s \in \mathbb{R}$</p> <p>When $k = 1$, the solution is : $x = -s - t ; y = t ; z = s$, $s, t \in \mathbb{R}$</p> <p>When $k \neq -1, 1$, the solution is : $x = 0 ; y = 0 ; z = 0$</p>
5	$(a) \begin{pmatrix} -7 \\ 5 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} -2 \\ 3 \\ 1 \end{pmatrix} \text{ OR } \begin{pmatrix} -11 \\ 13 \\ 0 \\ -5 \\ 3 \end{pmatrix} + \lambda \begin{pmatrix} -2 \\ 3 \\ 1 \end{pmatrix} \text{ OR } \begin{pmatrix} 0 \\ -11 \\ 2 \\ -7 \\ 2 \end{pmatrix} + \lambda \begin{pmatrix} -2 \\ 3 \\ 1 \end{pmatrix} ; (a) \frac{2\sqrt{483}}{7}$
6	<p>(i) $2 + \frac{1}{x-4} - \frac{9}{x+4}$</p> <p>(ii) Asymptotes : $y = 2$, $x = -4$ and $x = 4$.</p> <p>(iii) Minimum Point $\left(8, \frac{3}{2}\right)$; Maximum Point $(2, 0)$.</p> <p>The curve crosses the axes at points : $\left(0, \frac{-1}{2}\right)$ and $(2, 0)$.</p> 