

- 3**    **(a)** A sequence has terms  $u_1, u_2, u_3, \dots$  defined by  $u_1 = 3$  and  $u_{n+1} = u_n^2 - 5$  for  $n \geq 1$ .
- (i)** Find the values of  $u_2, u_3$  and  $u_4$ . **[2]**
- (ii)** Describe the behaviour of the sequence. **[1]**
- (b)** The second, third and fourth terms of a geometric progression are 12, 8 and  $\frac{16}{3}$ .
- Determine the sum to infinity of this geometric progression. **[3]**