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| **Topic 5: Calculus** | **Graphical behaviors of functions and  the relationship between , , and** | | |
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| 1. Given:       1. Find    2. Find the intervals of for which is increasing and decreasing    3. Find    4. Find the intervals of for which is concave up and concave down | | | (3 marks)  (4 marks)   (2 marks)  (4 marks) |
| Mark scheme:   1. Solving for  Increasing:   Decreasing: 3. Concave up:  Concave down: | | (A1)(A1)(A1)  (M1) ft Setting their first derivative = 0 (A1) ft    (A1) ft  (A1) ft  (A1) ft (M1) ft  (M1) ft Setting their second derivative = 0  (A1) ft  (A1) ft  (A1) ft | |