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| **Topic 5: Calculus** | **Graphical Relationships of Anti-Derivatives (AA HL and AI HL Only)** |
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| 1. The graph of the function is shown below.
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| Let be the function given by . |
| 1. Find , , and .
2. Find the interval(s) within where is decreasing.
3. Find the interval(s) within where the graph of is concave down. Explain your reasoning.
4. On the axes below, sketch the graph of on the closed interval .

Mark scheme:1.
2. is decreasing on and  on these intervals
3. The graph is concave down on . This is true because on this interval, or because is decreasing on this interval.
4. Appropriate increasing/decreasing and concavity behavior.
 | (3 marks)(2 marks)(2 marks)(3 marks)(A1)(A1)(R1)(A1)(R1)(A1)(A1) |
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