Paper C   IB SL Paper 1 Practice Papers

As a guideline this paper should be completed in 1 hour.

No Calculator to be used in this examination.

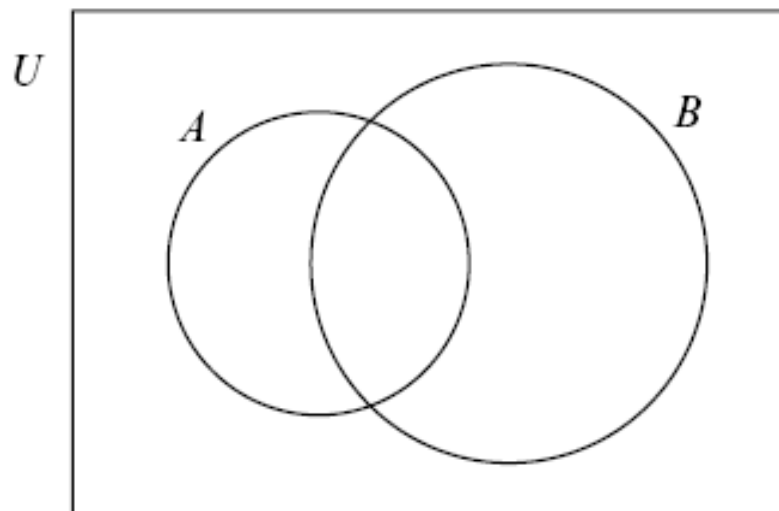**Section A [31 marks]**

1. *[Maximum mark 5]*

    Find the equation of the tangent to the curve $y = x^3 - 2x^2 + 3$ at the point (2, 3).

2. *[Maximum mark 4]*

    Solve the equation $\log_2 8 + \log_2 \dfrac{1}{16} + \log_2 64 = \log_2 x$.

3. *[Maximum mark 7]*

    The following Venn diagram shows a sample space U and events A and B.

    $n(U) = 45$, $n(A) = 25$, $n(A \cap B) = 7$, $n(B') = 24$.

    a)   Copy the diagram and shade $(A' \cap B)$

    b)   Find $n(A' \cap B)$.

    c)   Find Probability of $(A \cup B)$.

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4. *[Maximum mark 6]*

   Given that $\sin \theta = -\dfrac{\sqrt{3}}{2}$ and $\cos \theta = \dfrac{1}{2}$, and $0 \leq \theta \leq 2\pi$.

   a)   find the value of θ.

   b)   Find the exact value of $\tan \theta$.

5. *[Maximum mark 5]*

   The equation $3x^2 + kx + 12 = 0$ has two distinct real roots. Find the possible values of k.

6. *[Maximum mark 4]*

   An aeroplane is to begin it's descent to a runway. It will start by moving from a coordinate of (500, 300, 400) to a new position of (200, 100, 100). Halfway through this part of the descent the aeroplane is at position M. Assuming the aeroplane is travelling at constant speed find,

   a)   the coordinates of M,

   b)   the distance from where the aeroplane starts it's descent to the position M.
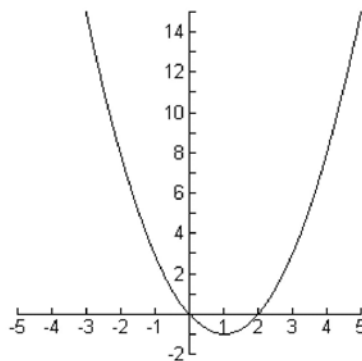
Paper C

Section B [29 marks]

7. *[Maximum mark 20]*

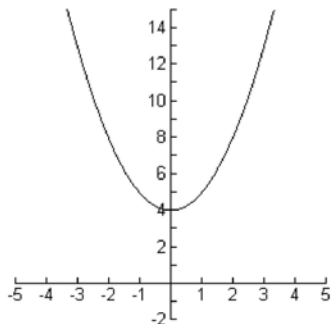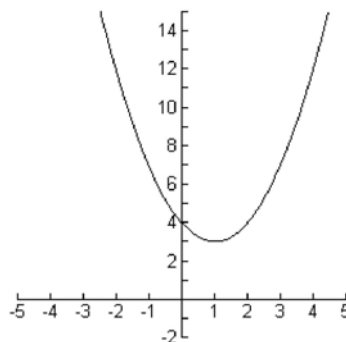   i) The graph below shows the curve $y = x^2$.
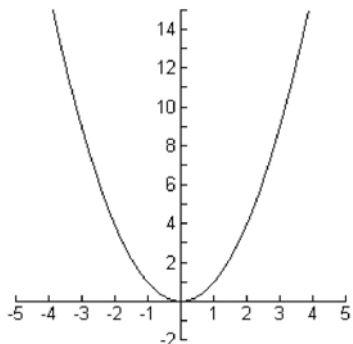
   b)

   Find the equation of the following graphs:

   a)

   c)

   [6 marks]