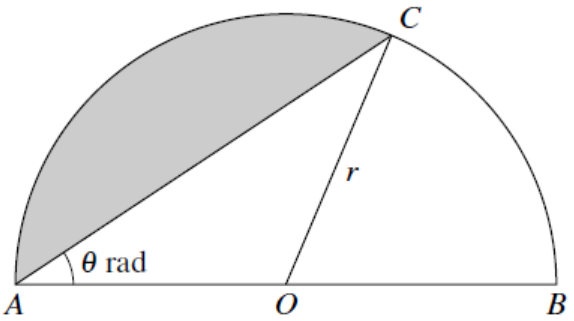
Numerical Solutions of Equations – 2022 A2 Nov Math

1. Nov/2022/Paper_9709_31/No.7(b _ c)

(b) Verify by calculation that a lies between 0.9 and 1. [2]

(c) Use an iterative formula based on the equation in part **(a)** to determine a correct to 2 decimal places. Give the result of each iteration to 4 decimal places. [3]

2. Nov/2022/Paper_9709_32/No.9



The diagram shows a semicircle with diameter AB, centre O and radius r. The shaded region is the minor segment on the chord AC and its area is one third of the area of the semicircle. The angle CAB is θ radians.

(a) Show that $\theta = \frac{1}{3}(\pi - 1.5 \sin 2\theta)$. [4]

(b) Verify by calculation that $0.5 < \theta < 0.7$. [2]

(c) Use an iterative formula based on the equation in part **(a)** to determine θ correct to 3 decimal places. Give the result of each iteration to 5 decimal places. [3]

3. Nov/2022/Paper_9709_33/No.8(b, c)

(b) Verify by calculation that p lies between 2.5 and 3. [2]

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(c) Use an iterative formula based on the equation in part **(a)** to determine p correct to 2 decimal places. Give the result of each iteration to 4 decimal places. [3]

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