HSC Mathematics Extension 2 2004
Quick Answers

Disclaimer

These answers are intended as a quick guide only. To save space there are no proofs or diagrams. For greater detail please refer to fully worked solutions.

Question 1

(a) $\frac{e^{3x}}{9}(3x-1)+c$

(b) $\frac{1}{2}$.

(c) $\sin^{-1}\left(\frac{x-2}{3}\right)+c$.

(d) (i) $a=3, b=-2$.

(ii) $3\ln|x+1|-2\ln|x-1|+\frac{1}{x-1}+c$.

(e) $\frac{\pi}{3}-\frac{\sqrt{3}}{2}$.

Question 2

(a) (i) $5+5i$

(ii) $2+4i$.

(b) (i) $\left(\frac{\sqrt{3}+1}{2}\right)+i\left(\frac{\sqrt{3}-1}{2}\right)$

(ii) $2\left[\cos\left(\frac{\pi}{3}\right)+i\sin\left(\frac{\pi}{3}\right)\right]$

(iii) $\sqrt{2}\left[\cos\left(\frac{\pi}{12}\right)+i\sin\left(\frac{\pi}{12}\right)\right]$.

(iv) $\frac{\sqrt{3}-1}{2\sqrt{2}}$

Question 3

(c) $5x+y-9=0$.

(d) (ii) $\frac{512\sqrt{3}}{9}$ units^3.

Question 4

(a) (i) $\frac{119}{3}$.

(ii) $-\frac{17}{9}$.

(iii) 1.

(b) (iii) $AH = AM$.

(c) (ii) e.

Question 5

(a) (i) $(0,0)$ and $(2a,2a^2)$.

(iii) $8\pi a^4$ units^3.

(b) (i) 2^n-2.

(ii) 150.

Question 6

(a) (ii) $\frac{\pi^2}{4}$.

(b) (vi) $A>\frac{gh}{2B}$.

Question 7

(b) (iii) $\alpha=\frac{\pi}{4},\frac{2\pi}{3},\frac{3\pi}{4},\frac{5\pi}{4},\frac{4\pi}{3},\frac{7\pi}{4}$.

Question 8

(a) (i) $\frac{1}{2}$.

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