

2019 VCE Specialist Mathematics 1 (NHT) examination report

Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

Question 1a.

9

Question 1b.

18

Question 2

$b = -4, c = 1, d = 26$

Question 3a.

(51, 65)

Question 3b.

0.02, 0.03 accepted

Question 4

$\log_e \left(\frac{4}{3} \right)$

Question 5a.

30° or $\frac{\pi}{6}$

Question 5b.

1

Question 6

$2\pi \log_e \left(\frac{9}{5} \right)$

Question 7

$$-\frac{3}{2}$$

Question 8

$$\frac{123}{32}$$

Question 9a.

$$\begin{aligned}\tan\left(\frac{5\pi}{12}\right) &= \tan\left(\frac{\pi}{6} + \frac{\pi}{4}\right) \\ &= \frac{\tan\left(\frac{\pi}{6}\right) + \tan\left(\frac{\pi}{4}\right)}{1 - \tan\left(\frac{\pi}{6}\right)\tan\left(\frac{\pi}{4}\right)} \\ &= \frac{\frac{\sqrt{3}}{3} + 1}{1 - \frac{\sqrt{3}}{3}} \\ &= \frac{\sqrt{3} + 3}{3 - \sqrt{3}} \\ &= \frac{\sqrt{3} + 3}{3 - \sqrt{3}} \times \frac{3 + \sqrt{3}}{3 + \sqrt{3}} \\ &= \frac{6\sqrt{3} + 12}{6} \\ &= \sqrt{3} + 2\end{aligned}$$

Alternatively, a double angle formula could have been used to show the given value.

Question 9b.

$$\frac{2\pi}{3}$$