

BOARD OF INTERMEDIATE & SECONDARY EDUCATION, SAHIVAL

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SUBJECT: MATH EXAM 2nd Annual 2022 CLASS: Inter P-I

GROUP: I DATE: 21-12-22

(GENERAL INSTRUCTIONS FOR MARKING KEY)

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$$\begin{aligned} \sqrt{99} &= (100-1)^{\frac{1}{2}} \\ &= 10 \left(1 - \frac{1}{100} \right)^{\frac{1}{2}} \\ \sqrt{99} &= 10 \left[1 + \frac{1}{2} \left(-\frac{1}{100} \right) + \frac{1}{2} \left(\frac{1}{2} - 1 \right) \left(-\frac{1}{100} \right)^2 + \dots \right] \quad (1M) \\ &= 10 \left[1 - \frac{1}{200} - \frac{1}{80000} + \dots \right] \\ &= 10 \left[1 - 0.005 - 0.0000125 + \dots \right] \\ &\approx 9.950 \quad (1M) \end{aligned}$$

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(i)

$$\begin{aligned} r &= 14 \text{ cms} \\ \theta &= 45^\circ \\ \theta &= 45 \times \frac{\pi}{180} \text{ radians} \\ \theta &= \frac{\pi}{4} \text{ rad} \\ l = r\theta &= (14) \left(\frac{\pi}{4} \right) \text{ cms} \quad (1M) \\ l &\approx 11 \text{ cms} \quad (1M) \end{aligned}$$

(ii) When $\theta = 45^\circ$
L.H.S

$$\tan 2\theta = \tan 90^\circ = \infty \quad (1M)$$

R.H.S

$$\frac{2 \tan \theta}{1 - \tan^2 \theta} = \frac{2 \tan 45^\circ}{1 - \tan^2 45^\circ} \quad (1M)$$

$$= \frac{2}{1-1} = \infty$$

L.H.S = R.H.S

(iii) L.H.S

$$\begin{aligned} &= \frac{(1 - \sin \theta)(1 + \sin \theta)}{\cos \theta (1 + \sin \theta)} \quad (1M) \\ &= \frac{\cos^2 \theta}{\cos \theta (1 + \sin \theta)} \\ &= \frac{\cos \theta}{1 + \sin \theta} = \text{R.H.S} \quad (1M) \end{aligned}$$

or any alternate way.
* (Students can obtain the result by cross-multiplying...)

(iv) $\cot(-85^\circ)$
 $= -\cot(85^\circ) \quad \because \cot(-\theta) = -\cot \theta$
 $= -\cot\left(90^\circ - \frac{\pi}{4}\right) \quad (1M)$
 $= -(-\tan \frac{\pi}{4}) = 1 \quad (1M)$

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RE-CHECKED BY تم نے درج بالا پرچہ (انتخابیہ + معروضی) اور ہدایات کے حوالے سے مکمل طور پر تہی کر لی ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

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