Minnesota State High School Mathematics League

2019-20 Meet 1, Individual Event C

Question #1 is intended to be a quickie and is worth 1 point. Each of the next three questions is worth 2 points. Place your answer to each question on the line provided. You have 12 minutes for this event.

NO CALCULATORS are allowed on this event.

_____ 1.   Determine exactly the value of $\sin\dfrac{\pi}{3} + \tan\dfrac{\pi}{4} + \cos\dfrac{\pi}{6}$.

_____ 2.   Determine exactly the smallest positive integer n such that $\sec\left(400°\right)\cdot\sin\left(n°\right)=1$.

_____ 3. $\triangle ABC$ has a right angle at B. If $BC = 1$ and $\cos A = \dfrac{1}{3}$, determine exactly the perimeter of the triangle.

_____ 4.   In trapezoid $ABCD$, $\overline{AB} \parallel \overline{CD}$. If $AB = 6$, $BC = 8$, $CD = 15$, and $AD = 4$, determine exactly the value of $\cos A + 2\cos B$.

Name: _____   Team: _____