Exam 22 Name: _____ RHS
Pre-Calc RH

Show your work for full credits.
Part I – Calculator (6 pts each)

1. If $\ln a = 2.11$, what is the value of $\ln(ae^2)$?

2. Let $3.12^a = 2.13^b$. what is the value of $\frac{a}{b}$?

3. In ΔABC, $AB = 10, BC = 10, m\angle B = 40°$. Find AC.

Part II – No Calculator (10 pts each) Name: _____

4. Prove

   **you may work on only one side of the equation.*

$$\frac{\tan a + \tan b}{\cot a + \cot b} = (\tan a)(\tan b)$$

5. Simplify the given expression in terms of A.

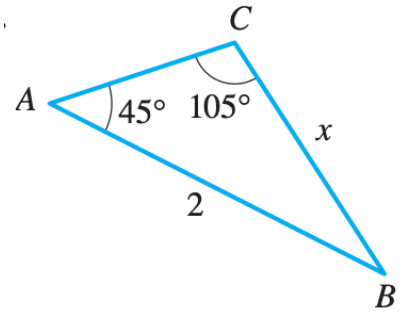
$$\frac{1}{x^2\sqrt{9+x^2}}, \qquad x = 3\tan A$$

6. Let $n = \log_2 3 \cdot \log_3 4 \cdot \log_4 5 \cdots \log_{2019} 2020$. What is the least integer greater than n?

7. What is the value of the given summation?

$$\sum_{i=1}^{10} \sum_{j=1}^{10} (ij)$$

8. Find the value of x. Then, find the area of the triangle.



9. Write the first expression in terms of the second, for A in the given quadrant.

$\csc^2 A \cos^2 A$, $\sin A$; A in any quadrant

10. Find the exact value of the given expressions.

a. $\tan(-240°)$

b. $\sec\frac{16\pi}{3}$

11. A point *P* moving in simple harmonic motion completes 8 cycles every second. If the amplitude of the motion is 40 cm, find an equation that describes the motion of *P* as a function of time. Assume the point *P* is at its maximum displacement when $t = 0$.