M17_LE5_001

Mathematics 17 — College Algebra and Trigonometry
Fifth Long Examination — First Semester, AY 2012-2013

I.

1. Write TRUE if the statement is true, otherwise, write FALSE. *1 point each*
   (a) Given any right triangle, the angle opposite the hypotenuse has the largest measure.
   (b) If $r,\theta \in \mathbb{R}$, then $rcis(-\theta) = -rcis\theta$.

2. Evaluate the following *2 points each*
   (a) $\cot^{-1}\left(\cot\left(\frac{13\pi}{12}\right)\right)$
   (b) $\sin\left(\cos^{-1}\left(\frac{1}{2}\right)\right)$

II.

1. Evaluate: $\sin\left(\csc^{-1}(2) - \sin^{-1}\left(-\frac{3}{5}\right)\right)$ *4 points*

2. Simplify and express the final answer in rectangular form: $\frac{[2cis(53^o)]^5}{16cis(-65^o)cis(90^o)}$ *4 points*

III.

1. Solve for *x*: $Arc\sec(x+2) + Arc\tan(-\sqrt{3}) - 3Arc\cos 1 = 0$ *4 points*

2. Solve for all complex values of *z* (express *z* in standard polar form): $z^3 = \sqrt{2} - \sqrt{2}i$ *4 points*

IV.

1. Officer Stewie Griffin (OS) is on top of a lighthouse when he sees Prisoner Bryan (PB) at an angle of depression of 45^o trying to escape by rowing a boat away from the lighthouse. After an hour, PB is now 4 miles away from OS at an angle of depression of 15^o. How far has PB rowed at that time? *4 points*

2. From her house, Dora decided to go trick-or-treating in Willy Wonka's Chocolate Factory. The Map told Dora that she must first travel 8 km from her house to Count Dracula's Hotel Transylvania in the direction S76°E; and then 5 km more from the hotel in the direction S44°W to reach the factory. How far is her house from the hotel? *4 points*

END OF EXAM