

Quiz 2: You may use your text, notes, homeworks as references.

- 1) True or false: If a triangle is defined as three distinct points joined by three pieces of geodesics not all lying on the same geodesic, then every triangle on the cylinder will be a triangle on the plane when we *unroll* the cylinder. (You must justify your answer.)

- 2) Of the following surfaces (plane, sphere, cylinder, 90 degree cone, hyperbolic plane), on which of the surfaces is the Isosceles Triangle Theorem (ITT) always true? For each of the surfaces on which ITT is not always true, exhibit a counterexample.

- 3) True or false: Euclid's 5th Postulate is an equivalent statement to Playfair's Axiom (also called the High School Parallel Postulate). (You must justify your answer.)

- 4) True or false: If a triangle on the sphere is defined as three distinct non collinear points joined by the shortest geodesics, then the sum of its angles measured in radians is always greater than π . (You must justify your answer.)