MATH 495: KNOT THEORY, HOMEWORK 5

ADDITIVITY OF CROSSING NUMBER AND MANIFOLDS

Due in class, Tuesday, 3/18

Problems (to turn in).
  (1) Prove that if K_1 and K_2 are alternating knots, then $c(K_1 \# K_2) = c(K_1) + c(K_2)$.
  (2) Prove that the unit circle in $\mathbb{R}^2$ is a closed 1-manifold.
  (3) Prove that the unit 2-sphere in $\mathbb{R}^2$ is homeomorphic to the polyhedral surface constructed from the following eight triangles.
      $\triangle(1,0,0)(0,1,0)(0,0,1)$
      $\triangle(-1,0,0)(0,1,0)(0,0,1)$
      $\triangle(-1,0,0)(0,-1,0)(0,0,1)$
      $\triangle(1,0,0)(0,-1,0)(0,0,1)$
      $\triangle(1,0,0)(0,1,0)(0,0,-1)$
      $\triangle(-1,0,0)(0,1,0)(0,0,-1)$
      $\triangle(-1,0,0)(0,-1,0)(0,0,-1)$
      $\triangle(1,0,0)(0,-1,0)(0,0,-1)$