History of Mathematical Ideas
Quiz 9

Name:_____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Which of the following transformation groups on $\mathbb{R}^2$ preserve angle: the translation group, the orthogonal group the Euclidean group, the general linear group, or the affine group?

The translation group, the orthogonal group, and the Euclidean group.

2. Bézout's Theorem predicts the number of intersection points between a curve of degree m and a curve of degree n, provided the curves do not contain a common component.

(a) What is the predicted number of intersection points?

$m \cdot n$

(b) For the prediction to be true, three things must be taken into account when counting the intersection points. Name one of the three things.

Any one of the following three is correct: (i) complex points of intersection, (ii) intersection multiplicity, and (iii) intersection points at infinity.