

Final Exam: Friday 26 Apr(?)

- Format similar to 2018.
- Five questions total on the exam. Must attempt Question 1, and three others. 100 marks.
- Question 1: All areas of the course. Nine short questions, attempt four. 40 marks total.
- Questions 2,3,4,5: One for each of Axiom systems & Hyperbolic Geometry, Projective Geometry, Spherical Geometry and Euclidean Geometry. 20 marks each.
- All questions taken from lecture notes and problem sheets.
- Bring a calculator.

Given formulas

- Hyperbolic distance:

$$d(P, Q) = \log\left(\frac{|AQ||PB|}{|AP||QB|}\right)$$

where A, B are the extremities of the chord through P, Q .

- Cross Ratio:

$$[A, B, C, D] = \frac{|AC||BD|}{|BC||AD|}.$$

- Scalar triple product:

$$\mathbf{A} \cdot (\mathbf{B} \times \mathbf{C}) = \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix}$$

Given formulas

- Vector triple product:

$$\mathbf{A} \times (\mathbf{B} \times \mathbf{C}) = (\mathbf{A} \cdot \mathbf{C})\mathbf{B} - (\mathbf{A} \cdot \mathbf{B})\mathbf{C}$$

- Spherical coordinates:

$$(x, y, z) = (\rho \cos(\theta) \sin(\phi), \rho \sin(\theta) \sin(\phi), \rho \cos(\phi))$$

Module Assessment

- Final Exam: 70%.
- Continuous Assessment: 30%.
 - ▶ Class tests 1 and 2: Each 12%.
 - ▶ Geogebra Assignment: 6%.

Geogebra Assignment due April 12.