

Nepal Algebra Project(NAP)
Central Department of Mathematics
Tribhuvan University, Kirtipur, Kathmandu, Nepal
Fields and Galois Theory

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Summary of NAP: Module 3, Lecture 5

1. Formally defined an angle $\theta \in [0, 2\pi)$ to be **constructible** if the point $Q = (x, y)$ is constructible and the angle $P_1P_0Q = \theta$. (This definition is not given in Milne; recall that $P_0 = (0, 0)$ and $P_1 = (1, 0)$.)
2. We observed that $\pi/2$ and $\pi/3$ are both constructible and that, since we can bisect angles, we can construct many angles.
3. Used the triple angle formula for cos to show that $\pi/9$ is not constructible.
4. Formally defined a regular n -gon to be **constructible** if the angle $2\pi/n$ is constructible. (This definition is not given in Milne.)
5. We constructed an equilateral triangle, and a square and, again because of angle bisection, showed that we can construct many n -gons.
6. We proved that if p is a prime, and a p -gon is constructible, then p is a Fermat prime.
7. We briefly discussed why the regular 5-gon and 17-gon are constructible, and then spent time discussing last week's exercises.