Math 338 : Homework #2 (2015)

② Look carefully at Euclid's proof of the Pythagorean theorem and decide which axioms he uses in the proof.

② Given we have shown $\sqrt{2}$ is irrational, show that $\frac{3}{1+\sqrt{2}}$ is also irrational

③ Prove that $\sqrt{7}$ is irrational

④ Show that $2 \cdot 3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17 + 91$ is not prime

⑤ a) Show that $(x-1)(x^7+x^6+x^5+x^4+x^3+x^2+x+1) = x^8-1$

b) Show that $2^{40}-1$ is not prime

⑥ Write a few sentences on

a) why Thales was important to mathematics

b) "$\sqrt{2}$ is not a number"