

Homework for Lecture 10

1. Suppose $p_1=2 < p_2=3 < \dots < p_r$

Let $P = p_1 p_2 \dots p_r + 1$

Let p be a prime dividing P

p is not $p_1 \dots p_r$

p is also prime

Thus, there is infinite number prime

2. $\sqrt{144} = 12$ 1, 2, 3, 4, ... 140 (cross out the multiple of 2, 5, 7)

$11 < \sqrt{144} < 12$ the smallest is 11

$140 = 2^2 \cdot 5 \cdot 7$ 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131

$3 \cdot 3003 = 3 \times 7 \times 11 \times 13$

4. The prime less than 50, there are 2, 3, 5, 7, 11, 13, 17, 19

23, 29, 31, 37, 41, 43, 47

