

HOMEWORK 3 - MATH 110

DUE DATE: Friday, September 27

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each problem is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. What is the smallest natural number n , greater than 1, for which $(1 \times 2 \times 3 \times \dots \times n) + 1$ is *not* prime?
2. Is it possible for an extremely large prime to be expressed as a large integer raised to a very large power? Explain.
3. Are there infinitely many natural numbers that are not prime? If so, prove it.
4. Today is Saturday. What day of the week will it be in 3,724 days? What day of the week will it be in 365 days?
5. Look up your bank code on your check. Verify that it is a valid bank code.
6. Compute $5^{600} \pmod{7}$.