

# Putnam C.11

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## 1 Problems

**Putnam 1989/A1.** How many primes among the positive integers, written as usual in base 10, are alternating 1's and 0's, beginning and ending with 1?

**Putnam 1989/A2.** Evaluate

$$\int_0^a \int_0^b e^{\max\{b^2x^2, a^2y^2\}} dy dx$$

where  $a$  and  $b$  are positive.

**Putnam 1989/A3.** Prove that if

$$11z^{10} + 10iz^9 + 10iz - 11 = 0,$$

then  $|z| = 1$ . (Here  $z$  is a complex number and  $i^2 = -1$ .)