
Problem Set - 19 Jan 2024

PROBLEM 1 (2015 AMC 8 #9)

On her first day of work, Janabel sold one widget. On day two, she sold three widgets. On day three, she sold five widgets, and on each succeeding day, she sold two more widgets than she had sold on the previous day. How many widgets in total had Janabel sold after working 20 days?

- (A) 39 (B) 40 (C) 210 (D) 400 (E) 401

PROBLEM 2 (2011 AMC 8 #22)

What is the tens digit of 7^{2011} ?

- (A) 0 (B) 1 (C) 3 (D) 4 (E) 7

PROBLEM 3 (2022 AMC 10A #20)

A four-term sequence is formed by adding each term of a four-term arithmetic sequence of positive integers to the corresponding term of a four-term geometric sequence of positive integers. The first three terms of the resulting four-term sequence are 57, 60, and 91. What is the fourth term of this sequence?

- (A) 190 (B) 194 (C) 198 (D) 202 (E) 206

PROBLEM 4 (2012 AIME I #1)

Find the number of positive integers with three not necessarily distinct digits, abc , with $a \neq 0$ and $c \neq 0$ such that both abc and cba are multiples of 4.

PROBLEM 5 (2019 AMC 12B #25)

Let $ABCD$ be a convex quadrilateral with $BC = 2$ and $CD = 6$. Suppose that the centroids of $\triangle ABC$, $\triangle BCD$, and $\triangle ACD$ form the vertices of an equilateral triangle. What is the maximum possible value of the area of $ABCD$?

- (A) 27 (B) $16\sqrt{3}$ (C) $12 + 10\sqrt{3}$ (D) $9 + 12\sqrt{3}$ (E) 30