11. How many positive integers less than 1000 are relatively prime to 105? Two integers are relatively prime if their greatest common divisor is 1.

A. 325 B. 457 C. 466 D. 533 E. 674

12. In isosceles ΔABE with base AB, AB = 10 and BE = 13. Square ABCD intersects ΔABE at points F and G. Find the area common to the interiors of the square and the triangle.

A. 125/3 B. 35 C. 40 D. 175/3 E. 65

13. The equation $x^{\log_{25} 9} + 9^{\log_{25} x} = 54$ has a solution in common with which of the following?

A. $x^3 - 125x^2 - x + 125 = 0$ B. $x^3 + 5x^2 - 25x - 125 = 0$
C. $x^3 - 5x^2 - 25x + 125 = 0$ D. $5x^3 + 5x^2 - 125x - 125 = 0$
E. $5x^3 - 5x^2 - 125x + 125 = 0$

14. If you have eight pairs of socks, each pair a different color, find the probability that if you randomly lose five socks, the remaining socks form exactly four matching pairs (and three unmatched socks).

A. 20/39 B. 7/13 C. 22/39 D. 23/39 E. 8/13

15. If $h(x) = 2x + 2$ and $k(x) = 2x^3 - 7x^2 - 11x + 6$, find the sum of all of the irrational zeros of h(k(x)) and k(h(x)).

A. 1/2 B. 3/2 C. 7/2 D. 9/2 E. 11/2

16. If $h(x) = 2x + 2$ and $k(x) = 2x^3 - 7x^2 - 11x + 6$, find the sum of all of the rational zeros of h(k(x)) and k(h(x)).

A. -5/4 B. -3/4 C. -1/4 D. 1/4 E. 3/4

17. In pentagon AMTYC, AC = MT = 10, YT = CY = 20, $\angle A = \angle M = 135°$, and $\angle Y = 150°$. Find the area of the pentagon to the nearest square unit.

A. 315 B. 318 C. 320 D. 323 E. 325

18. How many 4-digit numbers whose digits are all odd are multiples of 11?

A. 80 B. 85 C. 90 D. 95 E. 100

19. Find the tens digit of 3^{2007}.

A. 0 B. 2 C. 4 D. 6 E. 8

20. In the sequence $a_1, a_2, a_3, \ldots$, $a_1 = 1$, $a_2 = 2$, $a_3 = 5$, and for all $n \geq 3$, $a_{n-1}a_{n-2} = 2a_n a_{n-2} - 2a_{n-1}a_{n-1}$. Find a_{2006}/a_{2005}.

A. 1002 B. 1002.5 C. 1003 D. 1003.5 E. 1004