

- Hiromi buys a TV in Oregon (where there is no sales tax) and receives a 13% discount on the list price. Later she sees an ad offering a 19% discount. If the stores agree to refund the difference and Hiromi gets \$21 back, what is the TV's list price?
A. \$300 B. \$320 C. \$325 D. \$330 E. \$350
- What is the coefficient of x^2 in the expansion of $(x^2 + 3x - 1)^2$?
A. -2 B. -1 C. 2 D. 7 E. 9
- Find the sum of the values of x for which $\frac{x-2}{x^2-4x+3}$ is undefined.
A. 3 B. 4 C. 5 D. 6 E. 7
- The lines with equations $ax + by = c$ and $dx + ey = f$ are perpendicular (a, b, c, d, e, f constants). Which of the following must be true?
A. $ad - be = 0$ B. $ad + be = -1$ C. $ae + bd = -1$ D. $ae + bd = 0$ E. $ad + be = 0$
- A palindrome is a word or a number (like RADAR or 1221) which reads the same forwards and backwards. If dates are written in the format MMDDYY, how many dates in the 21st century are palindromes?
A. 1 B. 12 C. 24 D. 36 E. 144
- In square ABCD, E is the midpoint of CD. Suppose AE intersects BD at F and the extension of side BC at G. If $AF = 2005$ and $EF = 1000$, find EG.
A. 1000 B. 2000 C. 2005 D. 3005 E. 4010
- For positive values of x for which $\sec^{-1}(x)$ is in the first quadrant, $\sec^{-1}(x) =$
A. $\frac{1}{\cos^{-1}(x)}$ B. $\sec\left(\frac{1}{x}\right)$ C. $\cos x$ D. $\cos\left(\frac{1}{x}\right)$ E. $\cos^{-1}\left(\frac{1}{x}\right)$
- Mrs. Abbott finds that the number of possible groups of 3 students in her class is exactly five times the number of possible groups of 2 students. How many students are in her class?
A. 15 B. 17 C. 20 D. 22 E. 25
- In how many ways can slashes be placed among the letters AMATYCSML to separate them into four groups with each group including at least one letter?
A. 28 B. 56 C. 70 D. 84 E. 112
- Two motorists set out at the same time to go from Danbury to Norwich, 100 miles apart. They follow the same route and travel at different but constant speeds of an integral number of miles per hour. The difference in their speeds is a prime number of miles per hour, and after driving for two hours, the distance of the slower car from Danbury is five times that of the faster car from Norwich. What is the faster car's speed?
A. 40 mph B. 42 mph C. 44 mph D. 46 mph E. 48 mph

Test #2

AMATYC Student Mathematics League Answers

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1. E
2. D
3. B
4. E
5. C
6. Correct for all students
7. E
8. B
9. B
10. B
11. E
12. A
13. C
14. D
15. C
16. D
17. C
18. C
19. D
20. A