

Acceptable Answer Formats

ABMC Graders and Problem Lords

September 3, 2016

1 General Policies for Grading

In ABMC, we want to make sure that if a participant fully solved a problem, they will get full credit. As such, we aren't going to be extremely long and pedantic in rules. So long as an answer is *fully correct*, and the handwriting is readable such that the answer is unambiguous, we'll award full points.

The purpose of these guidelines is to make it so we can grade the tests quickly and efficiently. The faster we grade the tests, the sooner you'll know how you did.

2 Acceptable Format Guidelines

We obviously want participants to be rewarded for their effort and problem solving skill on the contest. We will have a list of acceptable answers on our answer sheets and see if yours is on it. However, your answer may be technically correct, however, it is unsimplified, that you may have skipped an important aspect of the problem. Therefore, to make sure you get full credit and are rewarded for your hard work, make sure your answers are as *simplified* as possible.

For your answer to be considered simplified, you should:

1. We won't ask you to compute unreasonable calculations (i.e. $\cos 23$ or 3^{50} etc.). Therefore, please compute all calculations unless the problem specifies otherwise. In general, simplify as much as possible.
2. If the problem requests a rounded answer, only round at the *end* of the process. Do not round during any intermediate step of the problem.
3. Rational numbers *must* be expressed in lowest terms. While decimals are acceptable, their use is generally discouraged. If you use decimals, make sure your answer is exact. For example, $1/14$ is equal to

0.0714285, however, just 0.0714285 is unacceptable. Irrational constant, such as π or e , may not be expressed as decimals *or* fractions (i.e. 3.14 and 2.718 are unacceptable).

4. Fractions are expressed as $\pm \frac{a}{b}$, where a and b are natural numbers who satisfy the condition: $\gcd(a, b) = 1$. The form $\pm M \frac{a}{b}$, where M, a and b are natural numbers is unacceptable, so please keep your answers as common fractions as stated above.
5. Radicals must be simplified as much as possible. All square factors must be brought outside the radical (i.e. $\sqrt{32}$ becomes $4\sqrt{2}$). No decimals are allowed within a radical. Make sure that the radical is simplified as much as possible. For example, $\sqrt{1 + \sqrt{2}}$ cannot be further, while $\sqrt{3 + 2\sqrt{2}}$ can be simplified to $1 + \sqrt{2}$.
6. If an ordered pair is requested, it should be given in the form (x, y) if only 2 dimensions are required, and (x, y, z) for 3 dimensions. Parentheses must be included around ordered pairs.
7. Answers should be expressed in base 10 unless otherwise specified. For example, 11_2 is not acceptable while 3 is. This should be pretty straightforward.
8. Complex numbers should be in the form $a + bi$, where a and b are real numbers and $i = \sqrt{-1}$. Hypercomplex numbers will *not* be accepted.
9. If multiple answers are required (i.e. Find all possible values of $xy \dots$, Find all roots to the equation \dots), there is no required order to place the values in. Please surround your answers with brackets i.e. $\{a, b, c\}$, that way we know you understood that the order of the answers is irrelevant. Your answers should be separated by commas or semicolons. However, if your answer is missing any values, or has extra elements, you will receive no points for that problem.
10. If the problem requests an angle measurement, please give it in degrees.
11. If a polynomial is requested (i.e. Find all polynomials that satisfy \dots), please have the degrees of the polynomial, from left to right, in decreasing order (i.e. $a_n x^n + a_{n-1} x^{n-1} \dots a_2 x^2 + a_1 x + a_0$).
12. Interval notation can be used and will be accepted so long as it is used correctly.

Remember that these guidelines are not meant to make it difficult to get points. Should you feel unsure about what the correct format is, feel free to raise your hand so the proctor can come and assist you. Acceptable answers and formatting will be posted in the front of the room and explained before the competition.

If your answer doesn't completely follow the guidelines, it is up to the discretion of the Lord of Grading to decide whether points are to be awarded. Any decision made by him/her is final. If you use an alternate answer, and we decide to award you points, anyone else who had the same answer will get points as well. If you have any questions regarding these guidelines, please don't hesitate to email us at **abmathcompetition@gmail.com**. Happy problems!