

2021 LOG1 CONTEST

Accepted Disputes

Dispute #1

ALPHA

Question:

Question 1 of 15

1 pt

If the polar coordinate $(-1, \frac{\pi}{4})$ and the rectangular coordinate $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$ are on the same parabola, which of the following lines could be an axis of symmetry for the parabola?

- A) $y=0$
 B) $x=0$
 C)

$$y = \frac{\sqrt{2}}{2}$$

- D)

$$y = -\frac{\sqrt{2}}{2}$$

- E) NOTA

Answer:

1. **A** The polar coordinate $(-1, \frac{\pi}{4})$ is $(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$ in rectangular coordinates, which implies that there is an axis of symmetry about the y-axis.

Dispute:

The answer to problem 1 should be B. $x=0$. The argument in the solutions is correct, the parabola will have y-axis symmetry, but this means the axis of symmetry is $x=0$.

Resolution: The correct answer is only B.

Dispute #2

MU, ALPHA, & THETA

Question:

Question 7 of 15

1 pt

Which of the following are true about proving similar/congruent triangles?

- I. If two angles of a triangle are congruent then the two triangles are similar.
- II. If two pairs of corresponding sides are in proportion and there exists an equal angle that both the triangles share then the two triangles are similar.
- III. If three pairs of corresponding sides are in proportion then the two triangles are similar.

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- A)** I only
 - B)** II and III
 - C)** I and III
 - D)** All of the above
 - E)** NOTA

Answer:

7) C,

I is true because if we have 2 corresponding angles then the third must also be a corresponding angle. With all three congruent angles we can determine that one triangle is simply a dilation of another as the sides are constructed from the angles.

II is false because if we have 2 corresponding sides we must have the included angle (the angle that lies at the vertex of the two sides) as opposed to any two angles. The included angle with the two sides proves congruency

III is true because if we have 3 corresponding and proportional sides between the triangles we know (like stated in I) that the triangles are simply a dilation of each other.

Thus, only I and III are true.

Dispute:

Correct answer should be E

Statement I says "If two angles of a triangle are congruent". It should say "If two corresponding angles of two triangles are congruent". Thus Statement I is false and only Statement III is true.

Resolution: Answer C AND E will be accepted.

Dispute #3

ALPHA

Question:

Question 4 of 15

Generic

1 pt

The oblique asymptote to the function in question four will never touch the hyperbola itself. But which of the following is an intersection between the line parallel to the oblique asymptote with y-intercept 0 and the function?

A)

$$\left(5, -\frac{5}{4} \right)$$

B)

$$\left(5, \frac{13}{4} \right)$$

C)

$$\left(\frac{20}{3}, 5 \right)$$

D)

$$\left(\frac{23}{3}, 5 \right)$$

E) NOTA

What is the measure (in radians) of the acute angle created by the intersection of the oblique asymptotes of the hyperbola?

A)

$$\tan^{-1}\left(\frac{3}{4}\right)$$

B)

$$2 \tan^{-1}\left(\frac{3}{4}\right)$$

C)

$$\frac{\pi}{2} - \tan^{-1}\left(\frac{3}{4}\right)$$

D)

$$\pi - 2 \tan^{-1}\left(\frac{3}{4}\right)$$

E) NOTA

Dispute:

Question 4 and 5 regarding the function with oblique asymptotes had no picture to see the function. Without the picture, the information needed to complete the questions was insufficient. I believe that those two questions were impossible to complete.

Resolution:

These two questions are thrown out and all Alpha test-takers will receive credit for these two questions.