QQ3

Find Roots of Quadratic Functions

0 points possible (ungraded)

Find the roots of the following quadratic expression:

\(f(x) = 8x^2+54x+37 \)

Give the answer with three decimal places. For example, if your answer is 1.234567, please enter 1.235 in the box. Enter the bigger value as root 1. If you get only one root, enter the same value in the second box.

Root 1

Enter the greater of the two roots here.

-0.774 ✔ **Answer:** -0.774

\(\)

Root 2

Enter the second root here. If you only got one root, repeat the value here.

-5.976 ✔ **Answer:** -5.976

\(\)

Explanation

The roots of a quadratic polynomial \(a x^2 + bx + c\) with \(a \neq 0\) are given by the formula \[\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

To solve this in Wolfram|Alpha, enter:

```
roots 8x^2+54x+37
```

...and press Enter. Click *Approximate form* if needed.

To solve this in Cymath, enter:

```
solve 8x^2+54x+37=0
```

...and click *Solve!*

Submit You have used 1 of 3 attempts

Answers are displayed within the problem

Rectangle with Golden Ratio

0 points possible (ungraded)

The golden ratio is important in architecture and design because it is the foundation for the most aesthetically pleasing rectangles and linear proportions. The golden ratio is a ratio of the length to the width of a rectangle such that: \[\frac{L}{w} = \frac{w}{L-w} \]

where L represents the length, and w is the width of the rectange.

The funny thing about the equation above is that it can be solved as a quadratic equation. With this in mind, try to calculate the length of the rectangle with golden ratio proportions and a width of 95 cm (i.e. w=95 cm).

Give the answer with one decimal place, and without units of measure. For example, if your answer is 1.23 cm, please enter 1.2 in the box.

(Hint #1: Since the length of our rectangle is positive, please use the positive root as the answer. Hint #2: If you don't know how to solve this problem, check out the solution below.)

153.7 ✔ **Answer:** 153.7

\(\)

Explanation

To solve this manually you need to find the positive root for the: \(f(x) = L^2-95L-95^2 \)
The positive root for the above quadratic polynomial is given by the formula \[\frac{95 \pm \sqrt{(-95)^2 - 4(1)(-(95^2))}}{2(1)} \]
To solve this in Wolfram|Alpha, enter:

```
solve L/w=w/(L-w) if w=95
```

...and press Enter. Look for "Solutions", and click *Approximate form* if needed.

To solve this in Cymath, enter:

```
solve L/95=95/(L-95)
```

...and click *Solve!*

Submit You have used 1 of 3 attempts

Answers are displayed within the problem

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? Converting rational equation to quadratic function

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