

Quiz 6

This quiz is graded out of 8 marks. No books, watches, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. (5 marks) Solve for x:

$$\sqrt{x-88} - \sqrt{x+87} = 95$$

$$\sqrt{x-88} - 95 = \sqrt{x+87}$$

$$(\sqrt{x-88} - 95)^2 = (\sqrt{x+87})^2$$

$$x+87 = x-88 - 190\sqrt{x-88} + 95^2$$

$$190\sqrt{x-88} = 95^2 - 88 - 87$$

$$\sqrt{x-88} = \frac{95^2 - 88 - 87}{190}$$

$$(\sqrt{x-88})^2 = \left(\frac{95^2 - 88 - 87}{190}\right)^2$$

$$x = 88 + \left(\frac{95^2 - 88 - 87}{190}\right)^2$$

$$x = 88 + \left(\frac{885}{19}\right)^2$$

$$x = \frac{814993}{361}$$

Lets verify the solution:

$$LHS = \sqrt{\frac{814993}{361} - 88} - \sqrt{\frac{814993}{361} + 87}$$

The second term is larger than the first making the difference negative and not 95. Hence no solution.

Question 2. (3 marks) Solve for x and give the solution graph and set.

$$8 \leq \frac{-3x-5}{2} < 11$$

$$16 \leq -3x-5 < 22$$

$$21 \leq -3x < 27$$

$$-7 \geq x > -9$$

$$\text{set: } [-9, -7]$$

graph:

