

16 Quiz 16 MAT 1275 Professor Chiu

Name: _____

- This quiz consists of 1 question for a total of 10 points.
- You have 15 minutes to complete the quiz.
- Show all work and justify your answers.
- Scientific calculators are allowed.
- Wishing you success.

1. Solve

① Isolate " $\sqrt{\quad}$ " term on Left hand side

$$2\sqrt{x+3} + x = 5$$

$$2\sqrt{x+3} = 5 - x$$

② Take square on both sides

$$(2\sqrt{x+3})^2 = (5-x)^2$$

$$\Rightarrow 2^2 \cdot (\sqrt{x+3})^2 = 25 - 10x + x^2$$

$$\Rightarrow 4 \cdot (x+3) = 25 - 10x + x^2$$

$$\Rightarrow 4x + 12 = 25 - 10x + x^2$$

$$\Rightarrow 0 = 13 - 14x + x^2$$

$$\Rightarrow 0 = x^2 - 14x + 13 \Rightarrow 0 = (x-1)(x-13)$$

$$\Rightarrow x-1=0 \quad \text{or} \quad x-13=0$$

$$\Rightarrow x=1 \quad \text{or} \quad x=13$$

Check $x=1$

$$\text{Left hand} = 2 \cdot \sqrt{1+3} + 1$$

$$= 2 \cdot \sqrt{4} + 1 = 2 \cdot 2 + 1 = 4 + 1 = 5$$

$$\text{Right hand} = 5$$

$\Rightarrow x=1$ is an answer

$x=13$

$$\text{Left hand} = 2 \cdot \sqrt{13+3} + 13$$

$$= 2 \cdot \sqrt{16} + 13 = 2 \cdot 4 + 13 = 8 + 13 = 21$$

$$\text{Right hand} = 5$$

$\Rightarrow x=13$ is NOT an answer