

# Math 220 Section 6 Quiz 8

4 November 2015

Name: *Answer Key*

1. The sum of two non-negative numbers is 16. What is the largest possible value of the sum of their squares.

$$x + y = 16$$

$$S = x^2 + y^2$$

$$S(x) = x^2 + (16-x)^2$$

$$\text{domain} = [0, 16]$$

$$\begin{aligned} S'(x) &= 2x + 2(16-x)(-1) \\ &= 4x - 32 \end{aligned}$$

$$\text{critical number} = 8$$

closed interval method

x	S(x)
0	256
8	128
16	256

largest possible value

256