

## Quiz 3

This quiz is graded out of 10 marks. No books, calculators, 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.** §2.3 #66 (4 marks) Given the supply and demand equations, where  $x$  represents the quantity demanded in units of a thousand and  $p$  the unit price in dollars, find the equilibrium quantity and the equilibrium price.

$$p = -x^2 - 2x + 100 \text{ and } p = 8x + 25$$

Equilibrium at intersection

$$-x^2 - 2x + 100 = 8x + 25$$

$$0 = x^2 + 10x - 75$$

$$0 = (x + 15)(x - 5)$$

$$x = \cancel{15} \quad x = 5$$

not valid

∴ equilibrium quantity is 5000 and price is 65\$

So

$$p = 8(5) + 25$$

$$= 40 + 25$$

$$= 65\$$$

**Question 2.**

a. (1 mark) §12.1 #10 Convert the angle  $-210^\circ$  to radian measure.

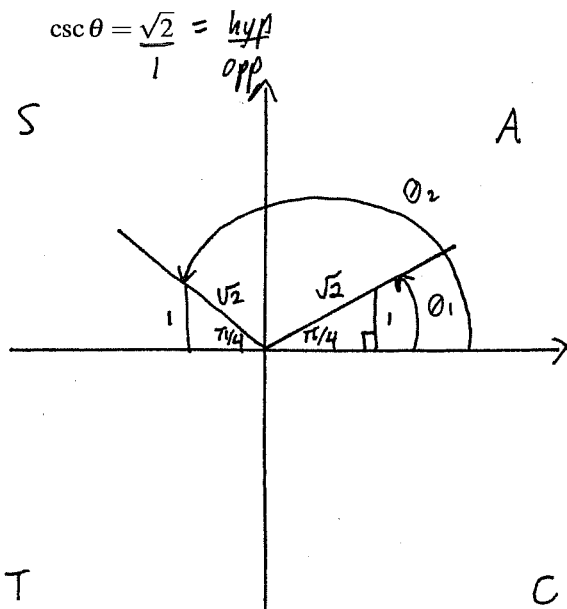
$$a. \quad -210^\circ \frac{\pi}{180^\circ} = -\frac{21}{18} \pi = -\frac{7}{6} \pi$$

b. (1 mark) §12.1 #16 Convert the angle  $-\frac{13}{12}\pi$  to degree measure.

$$b. \quad -\frac{13}{12} \pi \frac{180^\circ}{\pi} = -13(15^\circ) = -195^\circ$$

**Question 3.** §12.1 #18 (4 marks) Find all values of  $\theta$  that satisfy the equation over the interval  $[0, 2\pi]$

$$\csc \theta = \frac{\sqrt{2}}{1} = \frac{\text{hyp}}{\text{opp}}$$



$$\theta_1 = \pi/4$$

$$\theta_2 = \pi - \frac{\pi}{4} = \frac{3\pi}{4}$$