

# Algebra 201-007-50 C1

## Quiz 11

November 27, 2008

Name: SOLUTION  
Student ID: \_\_\_\_\_

1. (5 marks). Solve for  $x$ :

$$\sqrt{2x} - \sqrt{x+1} = 1$$

$$\sqrt{2x} = 1 + \sqrt{x+1}$$

$$(\sqrt{2x})^2 = (1 + \sqrt{x+1})^2$$

$$2x = 1 + \sqrt{x+1} + \sqrt{x+1} + (x+1)$$

$$2x = x+2 + 2\sqrt{x+1}$$

$$x-2 = 2\sqrt{x+1}$$

$$(x-2)^2 = (2\sqrt{x+1})^2$$

$$x^2 - 4x + 4 = 4(x+1)$$

$$x^2 - 4x + 4 = 4x + 4$$

$$x^2 - 8x = 0$$

$$x(x-8) = 0$$

$$x=0, x=8$$

CHECK:  $x=0$

$$\sqrt{2(0)} - \sqrt{0+1} = 1?$$

$$0 - 1 = 1?$$

$-1 \neq 1$  FALSE

$x=8$

$$\sqrt{2(8)} - \sqrt{8+1} = 1?$$

$$\sqrt{16} - \sqrt{9} = 1?$$

$$4 - 3 = 1?$$

$$1 = 1$$

TRUE

$\therefore \boxed{x=8}$

2. (5 marks). Solve for  $x$ :

$$-x^2 + 2x + 12 = 0$$

$$a = -1, b = 2, c = 12$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(2) \pm \sqrt{(2)^2 - 4(-1)(12)}}{2(-1)}$$

$$= \frac{-2 \pm \sqrt{4 + 48}}{-2} = \frac{-2 \pm \sqrt{52}}{-2}$$

$$= \frac{-2 \pm \sqrt{4\sqrt{13}}}{-2} = \frac{-2 \pm 2\sqrt{13}}{-2} = \frac{-2(1 \mp \sqrt{13})}{-2}$$

$$= 1 \mp \sqrt{13}$$

$$\therefore x = 1 - \sqrt{13}, 1 + \sqrt{13}$$