

Algebra 201-007-50 03

Quiz 12

December 5, 2008

Name: SOLUTIONS

Student ID: _____

1. (5 marks). Solve for x :

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

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

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

$$2x-3 = (x-3)(x-3)$$

$$2x-3 = x^2-6x+9$$

$$0 = x^2-6x+9-2x+3$$

$$0 = x^2-8x+12$$

$$0 = (x-6)(x-2)$$

$$\swarrow$$
$$x=6$$

$$\searrow$$
$$x=2$$

CHECK $x=6$

$$\sqrt{2(6)-3} + 3 = 6 ?$$

$$\sqrt{12-3} + 3 = 6 ?$$

$$\sqrt{9} + 3 = 6 ?$$

$$6 = 6 \text{ TRUE}$$

CHECK $x=2$

$$\sqrt{2(2)-3} + 3 = 2 ?$$

$$\sqrt{1} + 3 = 2 ?$$

$$4 = 2 \text{ FALSE}$$

$$\therefore \boxed{x=6}$$

2. (5 marks). Solve for x :

$$x^2 - 10x + 22 = 0$$

$$a=1, b=-10, c=22$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-10) \pm \sqrt{(-10)^2 - 4(1)(22)}}{2(1)}$$

$$= \frac{10 \pm \sqrt{100 - 88}}{2} = \frac{10 \pm \sqrt{12}}{2} = \frac{10 \pm \sqrt{4} \sqrt{3}}{2}$$

$$= \frac{10 \pm 2\sqrt{3}}{2} = \frac{2(5 \pm \sqrt{3})}{2} = 5 \pm \sqrt{3}$$