***Pre-Calculus 11***

***Unit 3: Solving Quadratic Equations***

***Worksheet 3.3 – Using Square Roots to Solve Quadratic Equations***

***(and Completing the Square)***

1. Solve each equation.

a) b) c)

d) e) f)

g) h) i)

j) k) l)

m) n) o)

p)

2. State the value of *k* that makes each expression a perfect square trinomial. Then factor it.

a) b) c)

d) e) f)

3. Solve by completing the square.

a) b) c)

d) e) f)

4. Solve by completing the square.

a) b) c)

d)

5. Solve by completing the square.

a) b) c)

d)

6. Solve by completing the square.

a) b) c)

d)

7. The height, h metres, of a falling object is related to the time, *t* seconds, the object has been

falling by the formula

Where *d* metres is the initial height of the object above the ground. The Bankers Hall

building in Calgary is 196 m tall. Express the time an object takes to reach the ground from

this height

1. as an exact number of seconds
2. to the nearest tenth of a second
3. The volume of a cone with height *h* metres and radius *r* metres is given by the formula

. What is the radius of a cone with volume and height .

1. A triangle has a height of and a base of . If the height and base are both decreased by the same amount, the area of the new triangle is . What are the base and height of the new triangle, to the nearest tenth of a centimetre?
2. The function gives the height of a thrown football as a function of the time, *t* seconds, since it was thrown. The ball hit the ground before a receiver could get near it.
3. How long was the ball in the air, to the nearest tenth of a second?
4. For how many seconds was the height of the ball at least 17m?

11. Solve each equation for by completing the square

a) b) c)

1. \*Find the values of that make a perfect square trinomial
2. \*Solve for by completing the square.
3. \*\*Solve for by completing the square.

***Solutions***

1. a) b) c)

d) e) f)

g) h) i)

j) k) l)

m) n) o)

p)

2. a) b) c)

d) e) f)

3. a) b) c)

d) e) f)

4. a) b) c) d)

5. a) b) c) d)

6. a) b) c)

d)

7. a) b)

8. 9.

10. a) b)

11. a) b) c)

12. 13. 14.