U2D5 MCR 3UI **Solving Quadratic Equations** **HW: Worksheet**

**** YOU will need SEPARATE paper for this lesson.**

A quadratic equation is a quadratic function where y = 0. Solving a quadratic equation results in the roots or zeros of the quadratic function.
To solve, _____ OR use the _____ _____.

1. Solve, using the most efficient method.

a. $x^2+5x=0$ **b.** $x^2+8x-9=0$

c. $x^2+16=0$ **d.** $(x+5)^2-81=0$

2. Locate the roots for the following quadratic functions.

a. $y=4x^2-4x-3$ **b.** $y=2x^2-3x-4$

3. Solve the following quadratics using the Quadratic Formula

We need this formula for quadratic equations that *do not factor*.

If $ax^2+bx+c=0$ then $x=$

So … Let's try again

a. $2x^2-3x-4=0$ **b.** $y=3x^2-5-6x$ **c.** $y=x^2-4x+6$

4. Solve for the values of x that satisfy the following equation. (solution on back)

$$(2x+1)^2+(2x+3)^2=26$$

5. Narein throws a ball that will move through the air in a parabolic path due to gravity. The height, h, in metres, of the ball above the ground after t seconds can be modelled by the function $h(t)=-4.9t^2+40t+1.5$.
Find the zeros (rounded to the nearest thousandth) of the function and interpret their meaning.

For projectile problems, keep in mind:
i) Object hits ground when the height = 0 m.
ii) If solving for "when" (the time) then need a height (h), if solving for a "how high" (height) then need a time (t).
iii) Object reaches max height at the vertex! (not necessarily at the halfway point if object has an initial height not equal to zero.
iv) Initial height of object can be found at t=0 s

6. A rectangular lot is bounded on one side by a river and on the other three sides by fencing. Then another section of fencing is used to divide the lot into two parts as shown. A total of 80m of fencing is used. Determine all possible dimensions of the lot with a total area of 400 m^2.