Y12 **:** PRACTICE ASSESSMENT **A**. **MERIT LEVEL ONLY.**

**Algebra**.

***1. Solve: (2x – 5 ) 2 + x2 = 25***

***2. garden***

 POND x

***The pond is 3m by 4m***

***The width of the garden is the same right round the pool.***

***The total area of the garden is 32 m2***

***Find the width x of the garden to 3 sig fig.***

***3. If I deposit $3000 for n years at 6% compound interest, find how many whole years it will take to more than double my money by solving:***

 ***3000(1.06)n = 6000***

***4. Solve 4x – 8 = x – 2***

 ***x + 1***

***5. A man throws a cricket ball and the equation of its path is***

***y = 2.3 + 5x – x2/5***

***where y is the height and x is the horizontal distance travelled in metres. Find how far from the man the ball lands.***

**Calculus.**

***1. Find the turning points of the curve:***

 ***y = 2x3 – 9x2 + 12x***

***and determine their nature.***

***2. The height H metre of a metal ball shot into the air at t sec is given by:***

 ***H = 80t – 5t2***

***(a) Find t when the ball is at its highest.***

***(b) Find the greatest height the ball reaches***

***(c) Find at what times the ball is at a height of 240m***

***(d) Find to 2 sig figs the times when the ball is at a height of 260 metres.***

***3. If y' = -3x2 + 18x***

***find y if y = 4 when x = 2***

***4. The velocity of a boomerang v at t sec is***

 ***v = 30 – 6t***

***(a) Find the initial velocity with which the boomerang was thrown.***

***(b) At what time was it at its maximum distance away?***

***(c) If x is the distance from the thrower find the maximum distance it goes.***