Studying & Revision Suggestions (A Level)

(3 pages; 27/7/20)

(1) Do regular exercises (eg 1 per page of textbook reading)

(2) If stuck on an exercise which has a worked solution, just glance at the solution until you see how to proceed, and then resume the exercise on your own.

Such an exercise is likely to be worth repeating soon afterwards.

(3) Build up a repertoire of standard exercises or 'revision routines' that would be worth repeating from time to time (see Appendix for examples).

(4) Test your understanding of a topic by starting with a blank sheet of paper and sketching out your own summary of everything related to it, creating your own examples.

(5) Devote some time to practising earlier topics - to keep them on the boil.

(6) The best way to be familiar with standard results (such as the quadratic formula) is probably to do relevant exercises (or revision routines), rather than setting out to memorise them.

(7) When revising, aim to cycle round the topics until the exam (so that they all get visited multiple times). Then you don't have to worry about a revision schedule, and there's no risk of a topic being neglected (eg if you're ill just before the exam).

(8) Nearer the exam, do alternate questions under exam conditions (ie not referring to the textbook, and imposing a suitable time constraint).

(9) Make sure that you can define everything in the index of the textbook.

Appendix: Examples of standard exercises and revision routines

(1) Solve $sin(2\theta + 30°) = 0.5$ for $0 \leq \theta < 360°$

(2) Rationalise the denominator of $\frac{6\sqrt{3}-7\sqrt{2}}{5\sqrt{3}-3\sqrt{2}}$

(3) Deriving sin, cos & tan of 30° & 60° from an equilateral triangle.

(4) Creating a quadratic equation (eg from $(x - 2)(x + 3) = 0$) and sketching it.

(5) Finding the equation of the straight line joining 2 points.

(6) Derive the quadratic formula by completing the square for $ax^2 + bx + c = 0$

(7) Start with eg $f(x) = (x - 2)(x + 2)(x + 3))$; then expand it, and applying the standard procedure for dividing by $x - 2$ (eg by equating coefficients).

(8) Find the equation of the tangent to a circle (such as

$(x-2)^2 + (y+1)^2 = 25$) at a convenient point on its circumference.

(9) Find the stationary points of a cubic (such as

$y = (x-2)(x+2)(x+3)$), and sketch it.

(10) Explore alternative expressions for eg $\cos(\theta + 180°)$

and consider graphs, and also translations.

[For example, $\cos(\theta + 180°) = \sin(90° - [\theta + 180°])$

$= \sin(-\theta - 90°) = -\sin(\theta + 90°) = -\cos(90° - [\theta + 90°])$

$= -\cos(-\theta) = -cos\theta$; compare eg $\cos(30° + 180°)$ &

$-\cos(30°)$; $y = \cos(\theta + 180°)$ is obtained from $y = \cos\theta$ by a translation of $-180°$ (consider $\theta = 30°$)]

(11) Derive $sin^2\theta + cos^2\theta = 1$ from Pythagoras.

(12) Expand $(2-3x)^5$

(13) Use vectors to find the shortest distance from a point to a line.

(14) Derive the suvat equations using velocity-displacement graphs.