ASSESSMENT 1 Solutions
This quiz is the SAMPLE quiz Assessment 1 for Mathematics B module.
INSTRUCTIONS

1. All MCQs will need to be answered correctly to get the highest mark 100%. You should attempt ALL 10 questions. All questions carry equal marks. No answer and incorrect answer give 0 marks.

2. For each question there is a single correct answer. Record each answer by ticking the corresponding box.

3. You have only 1 attempt to take this assessment. And you MUST REMEMBER to SUBMIT the quiz answers before 1 hour period has elapsed. This assessment is scheduled only once and cannot be rescheduled. Any student who fails to attend an assessment (and who does not have a valid reason for applying for exemption due to extenuating circumstances) will be awarded 0 marks.

4. The order of questions will be randomised within the test, answers will be randomised within the questions and the questions will be also randomised between students (i.e. each student will get a different version of the given question).

5. [optional] You will be also invited to upload scans of your rough work; in the event that you fail the assessment, we will use these to see whether there are method marks we can award to help you pass. So keep notes of your solutions to each question, mark clearly to which question your solution refers to. Then you can submit photos or a scan (in a PDF file) of your full solutions after you have submitted the quiz answers. There will be a separate place where you can upload your 1 pdf file with solutions. Read https://qmplus.qmul.ac.uk/mod/page/view.php?id=1387639How to submit solutions in PDF.

Question 1. The distance of a point P from the line $4x-3y=1$ is equal to 5 units. Find an equation specifying the loci of all P with this property.

[a] $y=\frac{4}{3}x-\frac{1}{3}$ [b] $4x-3y-26=0$ [e] not in the list

[c] $y=5$ [d] $4x-3y=6$

Question 2. Find the two real values of x satisfying $x-xe^{5x+2}==0$.

[a] $x_1=-1,\quad x_2=0$ [b] $x=-\frac{2}{5}$ [e] not in the list

[c] $x_1=-\frac{2}{5},\quad x_2=0$ [d] $x_1=\ln 5,\quad x_2=0$

Question 3. Consider $f(x)=\cos(4x)$ and $g(x)=x^2-5$. Find $(g\circ f)(x)$ and specify the image of $(g\circ f)(x)$.

[a] $\mathbb{R}$ [b] $[-1,1]$ [e] not in the list

[c] $[-6,-4]$ [d] $[0,1]$

Question 4. Simplify $\log_{10}2x-\log_{10}8x^3$.

[a] $-2\log_{10}2x$ [b] $-\log_{10}2x$ [e] not in the list

[c] $\log_{10}(2x-8x^3)$ [d] $\log_{10}16x^4$

Question 5. Consider $f(x)=x^2-px+1$, which has one repeated root at $x=1$. What is the minimum value of $f(x)$.

[a] 0 [b] 1 [e] not in the list

[c] 2 [d] p

Question 6. If $f(x)=e^{5x}$ then $f^{-1}(x)=$:

[a] $\frac{1}{e^{5x}}$ [b] $\frac{1}{5}\log x$ [e] not in the list

[c] $\frac{x}{e^5}$ [d] $\frac{1}{5}\ln x$

Question 7. The line passing through the points $A=(3,5)$ and $B=(7,-3)$ has the equation $y=$

[a] $11-2x$ [b] $4x-8$ [e] not in the list

[c] $-\frac{1}{2}x+\frac{7}{2}$ [d] $\frac{1}{2}x+\frac{7}{2}$

Question 8. What is the radius of the circle given by $x^2+y^2-10y-6x+30=0$?

[a] 4 [b] 2 [e] not in the list

[c] 3 [d] 5

Question 9. Choose the parametric equation of the circle given by $x^2+y^2-10y-6x+30=0$.

[a] $x=3+2\cos\theta$ and $y=5+2\sin\theta$ [b] $x=3+4\cos\theta$ and $y=5+2\sin\theta$

[c] $x=\cos\theta$ and $y=1+\sin\theta$ [d] $x=3+2\sin\theta$ and $y=5+2\sin\theta$

[e] not in the list

Question 10. The sum of remainders when $x^2+7x+(k-20)$ is divided by $(x+4)$ and $4x^2+(k-13)$ is divided by $(x-3)$ is 15. Find the value of k

[a] -32 [b] 15 [e] not in the list

[c] 23 [d] 12

