**Feedback on the 2012 0C1/1C1 exam**

A general comment is that most students knew how to answer the questions but lost marks through careless arithmetic errors, or by overlooking parts of the question altogether.

**1.** In part (1)(iii) a common mistake was 'simplifying' via

$$(2-(x-1)) = 2(-x-1) = 2x-2$$

when it should have been

$$(2-(x-1)) = (2-x+1) = (3-x).$$

Another common (yet inexplicable) mistake was to overlook part (1)(iv) altogether and then provide the answers in part 2 for (1)(iii) instead of for (1)(iv).

Finally many students failed to give the answer to part 3(iii) in it's simplest form (as the question asked), writing the exponent as 6/4 rather than 3/2. (Several students managed to calculate $6 \times (1/4)$ as 25/4 !!)

**2.** In part (3) a *very* common error when multiplying out was to evaluate $-x(x+6)$ as $-x^2+6x$. Hard to understand why so many students went wrong at this same point. Another common fault in this part was to get down to $x(x-7) = 0$ and then miss that this has *two* solutions, not just 7 but also 0.

Two common errors in part (5) were to evaluate $(x^2+1)^2$ as $x^4+1$ (it should be $x^4+2x^2+1$) and, for those who correctly knew that the method was to put $y = x^2+1$, or $y = x^2$, to then do everything right but only work out what $y$ should be and stop without giving all the resulting values for $x$.

**3.** A number of students had complained during the course that they 'didn't get' logs so it was a surprise to me that so many attempted this question and generally did well enough. There was one 'accident blackspot', in part (iii) expressing $4^{x-1}$ as $2^{2(x+1)}$ rather than $2^{2(x-1)}$, presumably getting it muddled with the $x+1$ on the other side of the equation.

**4.** Lots of students scored full marks on this question. One rather puzzling error that several students made in part (6) was to say that the line $y = 16-2x$ was the same as the line $y = 4-x$ – inexplicable!

**5.** Not such a popular question though many of the students who did attempt it got full marks. A common mistake in part (4) was to get down to the equation $x^2 = 1$ for the $x$-coordinate of the point of intersection of $\mathcal{C}$ and this normal and then conclude that $x = 1$, so missing the other solution $x = -1$. This meant that you only got back the point $A$ and in consequence it was not possible to carry on to part (5). Clearly finding just this one point rather than the two which the question said there were should have sounded alarm bells, but usually it did not!

**6.** Very few students tried this question. The ones who did were clearly very weak and I had the impression that they'd only chosen this question because they couldn't do anything else either. A common error was to falsely assume that $\cos(2A) = 2\cos(A)$, $\cos(3A) = 3\cos(A)$ etc.. The fact that this gave $\cos(2A) = 3/2$ when we know that the values of cos range between $-1$ and $+1$ should have prompted some rethink, but alas it did not!

**7.** Generally quite well done though some students lost marks by simply finding the stationary points but not classifying them (using the second derivative).

**8.** A surprising number of students attempted this question without having the faintest idea how to do any of it! Seems to me they were just throwing marks away. One common mistake was in part 1 where students obtained (incorrectly in fact) the answer $-2(2x+1)^{-3}$ and then 'simplified' it to $(-4x-2)^{-3}$ – which is not at all the same thing!