0C1/1C1 Feedback on the 2013 Exam

A point to mention about this, and all exams, is that if you get stuck on a question leave a page or two of space so that you can fill it in later (with luck!) rather than go straight on to the next question and resume your earlier solution at a distant point in the script. If you split your solution into lots of bits spread all over the script it is very easy for the marker, and subsequently the checker, to miss some of them.

1. Generally well done. The main two mistakes were not being able to add (or even multiply) fractions, for example getting $4 \times \frac{5}{6} = \frac{29}{6}$, and inexplicably giving the constant term in $-2x^3 + 5x^2 - 4x + 1$ (the correct answer to (iv)) as 0 when it should be 1. The question asked for you to give answers in *simplest form* so there were no marks for the answer 20/6 for part 3(iii) (it should be 10/3).

2. Quite well done. Again, as with the 1st In-Class Test, a common mistake was to incorrectly recall the formula for the roots of a quadratic as

$$-b \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

when it should be

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

3. Despite many students claiming at the time that they 'didn't get logs' most students attempted this question and did admirably. The commonest mistake (incredibly it was quite frequent) was to evaluate 3^{-2} in part (ii) as $\frac{2}{3}$. A second surprisingly frequent error in part (iv) was to go from $x \log_3(x) = \log_2(x)$ to $x = \dfrac{\log_3(x)}{\log_2(x)}$.

4. Very well done in general, only the last part proved tricky to most students.

5. Not so many takers as question 4 and they didn't do so well in general. One quite common shortcoming in part (3) was to do all the arithmetic which would confirm that the point $(-1, -7)$ lies on the curve $\mathcal{D}$ but then not actually say it explicitly. I gave the marks but in questions like this it helps the examiner to say in a few words that you have shown it.

A common error here (and similarly elsewhere) was to arrive at the equation $x(x+7) = 0$ and say that the solution is $x = -7$. There is of course another solution, $x = 0$.

6. Very few students attempted this question, probably because it was an innovation, and most of those who didn't have much idea what it was about judging by the marks they obtained.

7. Most students tried this one and generally did OK. One common fault with solutions (though if I could see what was intended it didn't lose any marks) was to find the two stationary points, check by substituting into $f''(x)$ one was a maximum and one a minimum but not actually say which was which!

An occasional error in this solution was that students worked out $f(x)$ at the two stationary point and then said that the larger of these was a local maximum and the smaller a local minimum. I know I said that in the exam you'd not be asked to classify points of infection but that does not mean to say that you can take it as given in your solution that they're not there!

8. Quite a lot of students tried this question, many without any idea what to do! I can only assume they'd prepared for the other five they did do and then just did question 8 at the end as sort of 'pot luck'. Unfortunately for most such students it turned out to be an empty pot, this question is easy enough if you know precisely what you are doing, but if not stay away!