EXAMINATION: Calculus II EXAMINERS: Various

SURNAME: (Print in ink) _____

FIRST NAME: (Print in ink) _____

STUDENT NUMBER: _____

SEAT NUMBER: _____

SIGNATURE: (Print in ink) _____
(I understand that cheating is a serious offense)

Please indicate your instructor and section by checking the appropriate box below:

☐	L03	R.G. Woods	M,W,F	9:30 - 10:20
☐	L04	E. Samei	M,W,F	11:30 - 12:20
☐	L05	N. Harland	Tues, Thurs	1:00 - 2:20
☐	Sisler	☐ SJR	☐ Deferred Exam	☐ Challenge for credit

INSTRUCTIONS TO STUDENTS:

This is a 1 hour exam. **Please show your work clearly**.

No texts, notes, or other aids are permitted. There are no calculators, cellphones or electronic translators permitted.

This exam has a title pages, 5 pages of questions and also 2 blank pages for rough work. Please check that you have all the pages. You may remove the blank pages if you want, but be careful not to loosen the staples.

The value of each question is indicated in the lefthand margin beside the statement of the question. The total value of all questions is 40 points.

Answer all questions on the exam paper in the space provided bbeneath the question. If you need more room, you may continue your work on the reverse side of the page, but CLEARLY INDICATE that your work is continued.

Run LaTeX again to produce the table

1. Use L'Hôpital's rule to evaluate

[4] (a) $\lim_{x\to 0} \left(\frac{ln(1+x)}{1-e^{2x}}\right)$

[5] (b) $\lim_{x\to 0} x^{\frac{1}{\sqrt{x}}}$

Correction: $\lim_{x\to\infty} x^{\frac{1}{\sqrt{x}}}$

[3] 2. (a) For a curve a with parametric equations $x = 2t - 1,\ y = 4t^2 - 4t$, find the equation of the tangent line to the curve at $t = 2$.

[4] (b) For the curve $x = \frac{t^3}{3} - 2t^2 + 3t - 7,\ y = t^2 - 4t;\ -\infty < t < \infty$, find all values of t such that the curve has a verticle or horizontal tangent line.

[5] 3. (a) Sketch the curve $r = 2 - \cos\theta$

[2] (b) A curve has equation $r^3 \sin\theta = 2$. Write its equation in cartesian coordinates.

[6] 4. (a) Evaluate $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{1}{n}\left(\frac{i^2}{n^2}\right)$ by converting to a definite inegral from 0 to 1 and evaluating.

[3] (b) Find $\frac{d}{dx}\left(\int_1^{x^2} \frac{1}{t^3+3} dt\right)$ at $x = 3$.

5. Evaluate the definite integral if it exists. If it doesn't exist, explain why not.

(a) $\int_{\frac{\pi}{2}}^{\pi} cosx\, dx$

(b) $\int_{-2}^{1} \frac{1}{x^2}\, dx$

(c) Find $\int (x-1)^2\, dx$