

Esta ACTIVIDAD DE CLASE deberá realizarse descargando los documentos *NB* incompletos correspondientes a estos ejercicios de clase. Deberás seleccionar en el siguiente panel el enlace correspondiente al número que se te ha asignado en la cuenta del material personalizado de la actividad *m1-a1a*.

17-CP-C4-Mathematica-C

001 **EJERCICIO 0 - EXPLICACION ETIQUETAS** **CURSO 2004-5**

Exercises

Most Chapters are followed by a list of homework exercises that pose problems of varying difficulty. Each exercise is labeled by a tag of the form

[type:rating]

The type is indicated by letters A, C, D or N for exercises to be answered primarily by analytical work, computer programming, descriptive narration, and numerical calculations, respectively. Some exercises involve a combination of these traits, in which case a combination of letters separated by + is used; for example A+N indicates analytical derivation followed by numerical work. For some problems heavy analytical work may be helped by the use of a computer-algebra system, in which case the type is identified as A/C.

The rating is a number between 5 and 50 that estimates the degree of difficulty of an Exercise, in the following “logarithmic” scale:

- 5 A simple question that can be answered in seconds, or is already answered in the text if the student has read and understood the material.
- 10 A straightforward question that can be answered in minutes.
- 15 A relatively simple question that requires some thinking, and may take on the order of half to one hour to answer.
- 20 Either a problem of moderate difficulty, or a straightforward one requiring lengthy computations or some programming, normally taking one to six hours of work.
- 25 A scaled up version of the above, estimated to require six hours to one day of work.
- 30 A problem of moderate difficulty that normally requires on the order of one or two days of work. Arriving at the answer may involve a combination of techniques, some background or reference material, or lengthy but straightforward programming.
- 40 A difficult problem that may be solvable only by gifted and well prepared individual students, or a team. Difficulties may be due to the need of correct formulation, advanced mathematics, or high level programming. With the proper preparation, background and tools these problems may be solved in days or weeks, while remaining inaccessible to unprepared or average students.
- 50 A research problem, worthy of publication if solved.

Most Exercises have a rating of 15 or 20. Assigning three or four per week puts a load of roughly 5-10 hours of solution work, plus the time needed to prepare the answer material. Assignments of difficulty 25 or 30 are better handled by groups, or given in take-home exams. Assignments of difficulty beyond 30 are never assigned in the course, but listed as a challenge for an elite group.

Occasionally an Exercise has two or more distinct but related parts identified as items. In that case a rating may be given for each item. For example: [A/C:15+20]. This does not mean that the exercise as a whole has a difficulty of 35, because the scale is roughly logarithmic; the numbers simply rate the expected effort per item.

001	EJERCICIO 2	CURSO 2004-5
<p>[A:15] Check by algebra that the sum of the shape functions for the six-node quadratic triangle (16.11) is exactly one regardless of natural coordinates values. Hint: show that the sum is expressable as $2S_1^2 - S_1$, where $S_1 = \zeta_1 + \zeta_2 + \zeta_3$.</p>		
001	EJERCICIO 3	CURSO 2004-5
<p>[A/C:15] Complete the table of shape functions (16.23) of the nine-node biquadratic quadrilateral. Verify that their sum is exactly one.</p>		

Universidad Politécnica Valencia (UPV) Custom Material ready to use in the Mathematica (v8) environment									
#01	#02	#03	#04	#05	#06	#07	#08	#09	#10
#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
#21	#22	#23	#24	#25	#26	#27	#28	#29	#30
#31	#32	#33	#34	#35	#36	#37	#38	#39	#40
#41	#42	#43	#44	#45	#46	#47	#48	#49	#50
#51	#52	#53	#54	#55	#56	#57	#58	#59	#60
#61	#62	#63	#64	#65	#66	#67	#68	#69	#70
#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
#81	#82	#83	#84	#85	#86	#87	#88	#89	#90
<i>Each student must download the one corresponding to the number assigned to them</i>									

Una vez completado, deberá subirse adecuadamente denominado a la cuenta de entrega personal, seleccionando del siguiente panel el enlace correspondiente al numero que se te ha asignado en la cuenta del material personalizado de la actividad *m1-a1a*.

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#31	#32	#33	#34	#35	#36	#37	#38	#39	#40
#41	#42	#43	#44	#45	#46	#47	#48	#49	#50
#51	#52	#53	#54	#55	#56	#57	#58	#59	#60
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#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
#81	#82	#83	#84	#85	#86	#87	#88	#89	#90
<i>Each student must select the one that corresponds to the number assigned to them</i>									