

Prince Sultan University, Department of Mathematics, 22/05/2011.
Calculus II (Math 113), Mid-Term 3- Spring (101).
DR ABDELOUAHED HAMDI DURATION : 60 MIN

- Answer all the questions.
- This exam consists of a total of 3 pages and 2 questions.
- Show all the key steps of your work.
- Scientific, non-programmable calculators are allowed.

Question	Maximum Score	Your Score
1	20	
2	30	
Total	50	

Name	
ID Number	

1. (8+4+8pts) Evaluate each limit

(a) $\lim_{x \rightarrow 0} \frac{x - \tan^{-1}(x)}{x \sin(x)}$

(b) $\lim_{x \rightarrow 0} \frac{\sin(2x)}{\tan(3x)}$

(d) $\lim_{x \rightarrow +\infty} \left(1 + \frac{3}{x}\right)^{4x}$

2. (5+5+10+10pts) Evaluate each integral

(a) $\int \frac{3 - 2x}{(x - 1)(x + 2)} dx$

(b) $\int \sin^{-1}(2x) \, dx$

(c) $\int e^{-x} \cos(x) \, dx$

(d) $\int \frac{2x^2 - 3x + 1}{x^3 + 2x} \, dx$

3. (Bonus-4pts) Find the antiderivative of $f(x) = \frac{1}{\sin(x-a)\sin(x-b)}$