

Prince Sultan University, Department of Mathematics, 8/01/2011.
Calculus II (Math 113), Mid-Term 3- Fall (101).
DR ABDUL-WAHED HAMDI DURATION : 60 MIN

- Answer all the questions.
- This exam consists of a total of 4 pages and 3 questions.
- Show your working in the space provided for each question.
- Show all the key steps of your work.
- Scientific, non-programmable calculators are allowed.

Question	Maximum Score	Your Score
1	20	
2	20	
3	20	
Total	60	

Name	
ID Number	

1. Evaluate each limit

(a) $\lim_{x \rightarrow 5} \frac{\sqrt{x-1} - 2}{x^2 - 25}$

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

(c) $\lim_{x \rightarrow +\infty} \frac{x^2}{\ln(x)}$

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

(d) $\lim_{x \rightarrow +\infty} \left(1 + \frac{2}{x}\right)^{5x}$

2. Evaluate $\frac{dy}{dx} = y'$

(a) $y = x^{4+x^2}$

(b) $y = \log[\ln(x^2)]$

(c) $y = \cos^{-1}(e^{3x} + 1)$

(d) $y = \sinh(1 - x)$

3. Evaluate each integral

(a) $\int \frac{e^x}{1 + e^{2x}} dx$

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

(c) $\int (x^2 - 3x)e^x dx$

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