

SI Session: July 29<sup>th</sup>, 2008  
Mondays – Thursdays  
12:35 PM – 2:05 PM  
Room 1229

Prof. Stockton : Calculus II  
Summer II 2008  
SI Leader : Neil Jody

[1] Evaluate each integral.

(a)  $\int \frac{\sqrt{1-4x^2}}{x} dx$

(b)  $\int \csc^3 x dx$

(c)  $\int \cos^3 x \sin^4 x dx$

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

$$(e) \int \frac{1}{x\sqrt{4+9x^2}} dx$$

[2] Evaluate each limit. Your answer should be a number,  $\infty$ ,  $-\infty$ , or DNE.

(a)  $\lim_{x \rightarrow 0} (\cos x)^x$ , form:

(b)  $\lim_{x \rightarrow \infty} \left( \frac{x+1}{x-1} \right)^x$ , form:

(c)  $\lim_{x \rightarrow \infty} (5 + 2e^{2x})^{e^{-2x}}$ , form:

(d)  $\lim_{x \rightarrow \pi/2^+} \frac{1 + \sec x}{2 \sin x}$ , form:

[3] Determine if each improper integral converges or diverges. If it converges, state its value.

$$(a) \int_3^4 \frac{1}{(x-3)^{4/3}} dx$$

$$(b) \int_{-\infty}^0 e^{-2x} dx$$

$$(c) \int_1^2 \frac{1}{x^2 \sqrt{4-x^2}} dx$$

$$(d) \int_0^{+\infty} \frac{e^x}{1+e^x} dx$$

$$(e) \int_0^{\pi/2} \sec \theta \, d\theta$$