

SI Session: Exam II Review
Wednesday, July 30th
12:35 PM – 2:35PM
Room 1229

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

[1] Evaluate each integral.

(a) $\int \cos^2(3x) dx$

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

(c) $\int e^{2x} \cos x \, dx$

(d) $\int \sin^3 x \cos^6 x \, dx$

$$(e) \int \frac{3x^2 - x - 2}{(x-2)(x^2+4)} dx$$

$$(f) \int \frac{1}{x\sqrt{9-25x^2}} dx$$

(g) $\int x^3 \sqrt{x^2 + 4} dx$

[2] Find the general partial fraction decomposition for $\frac{x^2 - 2x + 3}{(x - 2)^2 (x^2 + 9)^2 (x + 3)}$.

Do Not Solve for the undetermined coefficients.

[3] Evaluate each limit.

$$(a) \lim_{x \rightarrow 0} \frac{e^x + e^{-x} - 2}{x^2}$$

$$(b) \lim_{x \rightarrow +\infty} (e^x + 3)^{1/x}$$

$$(c) \lim_{x \rightarrow 0} \frac{e^x - e^{-x}}{\sin x}$$

$$(d) \lim_{x \rightarrow \infty} (\ln x)^{1/x}$$

- [4] Determine if each of the following improper integrals converges or diverges. If it converges, state its value.

(a) $\int_{-\infty}^5 \frac{1}{x^2 + 25} dx$

(b) $\int_1^2 \frac{2}{(x-1)^{4/3}} dx$

$$(c) \int_0^{\infty} x e^{-x^2} dx$$

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