Math 152

Winter 2004

Review 3

(1.) Evaluate the given indefinite integrals:

(a.) $\displaystyle\int \sin^2 3x \cos^2 3x \, dx$

(b.) $\displaystyle\int \frac{\ln x^4}{x} \, dx$

(c.) $\displaystyle\int \ln\sqrt{2x-1} \, dx$

(d.) $\displaystyle\int \frac{1}{x\sqrt{x^2+9}} \, dx$

(e.) $\displaystyle\int \frac{x^2}{x^4-1} \, dx$

(f.) $\displaystyle\int \frac{2x+3}{x^2+3x+5} \, dx$

(2.) Evaluate the given definite integrals:

(a.) $\displaystyle\int_0^{\pi/4} x^2 \cos x \, dx$

(b.) $\displaystyle\int_0^1 \frac{2x+3}{x^2+3x+5} \, dx$

(c.) $\displaystyle\int_3^5 \frac{1}{x^2-6x+13} \, dx$

(3.) Evaluate the limit:

(a.) $\displaystyle\lim_{x\to 0} \frac{\sin^2 x}{x^2}$

(b.) $\displaystyle\lim_{x\to 1} \frac{x^2-1}{\ln x}$

(c.) $\displaystyle\lim_{x\to 0} (\cos x)^{x^2}$

(d.) $\displaystyle\lim_{x\to 0} \cot x - \csc x$