TEST #2: REVIEW

#1. INTEGRATE BY PARTS:

$$\int x^2 e^x\,dx \qquad \int x^5 \ln x\,dx \qquad \int e^x \sin 2x\,dx$$

#2. TRIG. INTEGRALS:

$$\int \sin^3 x \cos^2 x\,dx \qquad \int \sin^4 x \cos^2 x\,dx$$

$$\int \tan^3 x \sec^4 x\,dx \qquad \int \tan^2 x \sec^4 x\,dx$$

$$\int \csc^4 x \cot^4 x\,dx$$

#3. TRIG. SUB.:

$$\int \frac{1}{(4+x^2)^{3/2}}\,dx \qquad \int \frac{1}{x\sqrt{1-x^2}}\,dx$$

$$\int \frac{\sqrt{9x^2+4}}{x^4}\,dx \qquad \int \frac{1}{\sqrt{49x^2-16}}\,dx$$

#4. PARTIAL FRACTIONS:

$$\int \frac{x^3-2x+7}{(x+2)(x-1)}\,dx \qquad \int \frac{x^3-x+2}{x^3+2x^2+x}\,dx \qquad \int \frac{x^2-x-21}{(2x-1)(x^2+4)}\,dx$$

#5. IMPROPER: $\int_0^e \ln x\,dx \qquad \int_{-\infty}^{\infty} \frac{1}{x^2+4}\,dx \qquad \int_{-\infty}^{\infty} \frac{1}{x^{4/3}}\,dx$

#6. DIFF. EQ.: $\frac{dy}{dx} = e^{2x}y,\ y(0)=1 \qquad \frac{dy}{dx} = \frac{y^2}{x-2},\ y(3)=1$

* ALSO DO WORD PROBLEMS SUCH AS HALF-LIFE, POPULATION, ETC.