

5.8

Note Title

1/9/2008

Tables of integrals

See pages 6-10 in back of textbook

$$\textcircled{ex} \int \frac{\sqrt{2y^2-3}}{y^2} dy$$

from pg 7 #42 $\int \frac{\sqrt{u^2-a^2}}{u^2} du = -\frac{\sqrt{u^2-a^2}}{u} + \ln|u+\sqrt{u^2-a^2}| + C$

$$= \int \frac{\sqrt{(\sqrt{2}y)^2-3}}{\left(\frac{\sqrt{2}y}{\sqrt{2}}\right)^2} dy = \int \frac{\sqrt{(\sqrt{2}y)^2-3}}{\frac{(\sqrt{2}y)^2}{2}} dy = 2 \int \frac{\sqrt{(\sqrt{2}y)^2-3}}{(\sqrt{2}y)^2} dy$$

$$u = \sqrt{2}y \quad a = \sqrt{3} \quad \Rightarrow du = \sqrt{2} dy$$

$$= 2 \int \frac{\sqrt{u^2-3}}{u^2} \cdot \frac{1}{\sqrt{2}} du = \frac{2}{\sqrt{2}} \int \frac{\sqrt{u^2-3}}{u^2} du$$

$$\stackrel{\#42}{=} -\frac{2}{\sqrt{2}} \left[\frac{\sqrt{2y^2-3}}{\sqrt{2}y} + \ln|\sqrt{2}y + \sqrt{2y^2-3}| \right] + C$$

$$\textcircled{\text{ex}} \int \frac{e^{2x}}{\sqrt{2+e^x}} dx \quad u=e^x \quad du=e^x dx$$

$$= \int \frac{e^x}{\sqrt{2+e^x}} \cdot e^x dx$$

$$= \int \frac{u}{\sqrt{2+u}} du \quad \#55 \quad a=2 \quad b=1$$

$$= \frac{2}{3} (u-4) \sqrt{2+u} + C$$

$$= \frac{2}{3} (e^x-4) \sqrt{2+e^x} + C$$

$$\int \frac{u}{\sqrt{a+bu}} du = \frac{2}{3b^2} (bu-2a) \sqrt{a+bu} + C$$