

. . . work to do even with a “cheat sheet” . . . .

1. Use #32.  $u = x \implies du = dx$ ,  $a = \sqrt{3}$

$$\begin{aligned}\int \frac{\sqrt{3-x^2}}{x} dx &= \int \frac{\sqrt{(\sqrt{3})^2 - u^2}}{u} du \\ &= \sqrt{3-x^2} - \sqrt{3} \ln \left| \frac{\sqrt{3} + \sqrt{3-x^2}}{x} \right| + C\end{aligned}$$

2. Use #101.  $u = x \implies du = dx$

$$\begin{aligned}\int x^3 \ln x dx &= \frac{x^{3+1}}{(3+1)^2} [(3+1) \ln x - 1] + C \\ &= \frac{x^4}{16} [4 \ln x - 1] + C = \frac{x^4}{4} \ln x - \frac{x^4}{16} + C\end{aligned}$$