

$$3) \int_{-2}^4 x^2 (x^3 + 8)^2 dx$$

$$u = x^3 + 8$$

$$du = 3x^2 dx$$

$$\frac{1}{3} du = x^2 dx$$

$$u(-2) = 0$$

$$u(4) = 72$$

$$= \frac{1}{3} \int_0^{72} u^2 du$$

$$= \frac{1}{3} \left[\frac{u^3}{3} \Big|_0^{72} \right] = 41472$$

$$4) \int_{\ln 2}^{\ln 3} e^x dx = e^x \Big|_{\ln 2}^{\ln 3} = e^{\ln 3} - e^{\ln 2} = 3 - 2 = 1$$

NO u-sub!

*

$$5) \int \frac{2x+1}{\sqrt{x+4}} dx$$

$$u = x+4 \rightarrow x = u-4$$

$$du = dx$$

2

$$\int \frac{2x+1}{\sqrt{u}} du = \int \frac{2(u-4)+1}{\sqrt{u}} du = \int (2u-7)u^{-1/2} du$$

$$= \int 2u^{1/2} - 7u^{-1/2} du = \frac{2u^{3/2}}{\frac{3}{2}} - \frac{7u^{1/2}}{\frac{1}{2}} = \frac{4}{3}(x+4)^{3/2} - 14(x+4)^{1/2} + C$$