

5.3 C logs + e<sup>x</sup>

$$\text{Ex 1 } I = \int_1^3 2e^x dx = 2e^x \Big|_1^3 = 2e^3 - 2e$$

$$\text{Ex 2 } I = \int_0^3 2e^x dx = 2e^x \Big|_0^3 = 2e^3 - 2e^0 = 2e^3 - 2$$

or  $2(e^3 - 1)$

ln x : hey wait, recall that

$$\frac{d}{dx} \ln|x| = \frac{1}{x} \quad \text{so ...}$$

$$\text{Ex 3 } I = \int_1^6 \frac{1}{x} dx = \ln|x| \Big|_1^6 = \ln|6| - \ln|1|$$

$$= \ln 6 - \ln 1 = \ln 6$$

$$\text{Ex 4 } I = \int_2^6 \frac{4}{x} dx = 4 \ln|x| \Big|_2^6 = 4 \ln|6| - 4 \ln|2|$$

$$= 4 \ln 6 - 4 \ln 2$$

$$= 4 (\ln 6 - \ln 2)$$

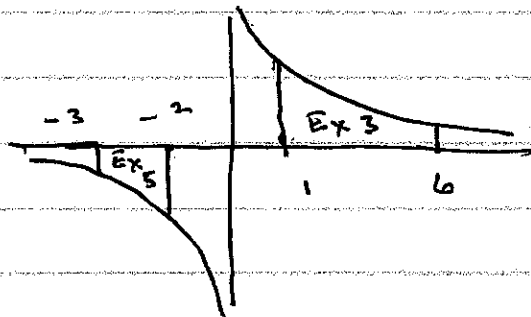
$$= 4 \ln\left(\frac{6}{2}\right) = 4 \ln 3$$

or  $\ln 3^4 = \ln 81$

$$\text{Ex 5 } I = \int_{-3}^{-2} \frac{1}{x} dx = \ln|x| \Big|_{-3}^{-2} = \ln|-2| - \ln|-3|$$

$$= \ln 2 - \ln 3$$

$$= \ln\left(\frac{2}{3}\right) < 0$$



5.3 < 2

Ex 6  $I = \int_{-1}^1 \frac{1}{x} dx$  DNE because the vertical asymptote is at  $x=0$ , in the middle of  $[-1, 1]$