

## HW Questions 6.1 #23, #35, #43

$$\textcircled{\#23} \int \left( \frac{1}{x} + \frac{2}{x^2} - \frac{1}{x^3} \right) dx = \int (x^{-1} + 2x^{-2} - x^{-3}) dx$$
$$= \ln|x| + \frac{2x^{-1}}{-1} - \frac{x^{-2}}{-2} + C$$

$$= \ln|x| - \frac{2}{x} + \frac{1}{2x^2} + C$$

\*Can only use  $\ln(x)$  when dealing w/a single power  
i.e.  $\frac{1}{x}$  not  $\frac{2}{x^2}$

$$\textcircled{\#35} \int (2^x - 3^x) dx = \int b^x dx = \frac{b^x}{\ln b} + C$$

$$= \frac{2^x}{\ln 2} - \frac{3^x}{\ln 3} + C$$

$\textcircled{\#43}$   $f(x)$  if  $f(0) = 0$  and tangent line @  $(x, f(x))$  has slope  $(e^x - 1)$ .

, so  $f'(x) = e^x - 1$

$$\int (e^x - 1) dx = e^x - x + C$$

$$f(x) = e^x - x + C \quad \text{and we know } f(0) = e^0 - 0 + C = 0$$

$$1 + C = 0$$

$$C = -1$$

Final answer  $f(x) = e^x - x - 1$