1. Find the following integrals:

$a) \int x^3 e^{x^4+2}\, dx$

$b) \int (x+1)(x^2+2x+3)^{12}\, dx$

$c) \int \frac{x}{x-1}\, dx$

(Hint: Let $u = x - 1$, so that $x = u + 1$, then divide before integrating.)

2. Solve the given separable differential equation (find the general solution).

$\frac{dy}{dx} = \frac{\ln x}{yx}$

Q: What goes up and down but doesn't move?