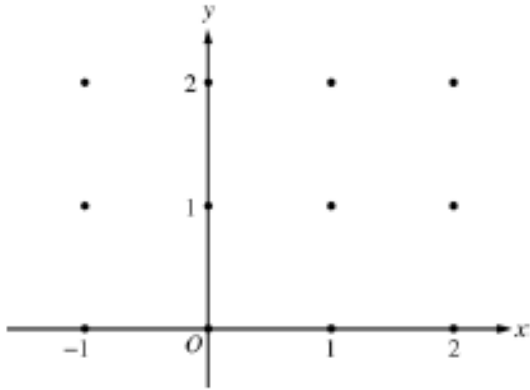1.   Consider the differential equation $\dfrac{dy}{dx} = \dfrac{xy^2}{2}$. Let $y = f(x)$ be the particular solution to this differential equation with the initial condition $f(-1) = 2$.

    a) On the axis provided, sketch a slope field for the given differential equation at the twelve points indicated

    b) Find the solution $y = f(x)$ to the given differential equation with the initial condition $f(-1) = 2$.

Rewrite the integral in terms of u and du. Then evaluate the integral.

2. $\displaystyle\int_{\pi/4}^{\pi/2} \dfrac{\cos x}{(\sin x)^3}\,dx \quad u = \sin x$

3. $\displaystyle\int_0^1 x^4\sqrt{1+x^5}\,dx \quad u = 1 + x^5$