Q1. Evaluate $i.\ \lim\limits_{x\to\infty}(x+1)^{\frac{1}{\ln x}}$ $ii.\ \lim\limits_{x\to 0^{+}}xe^{\frac{1}{x}}$ $iii.\ \lim\limits_{x\to 0^{-}}xe^{\frac{1}{x}}$

$i.$ [ ] $ii.$ [ ] $iii.$ [ ]

Q2. find $f\,'(1)$, if $\int f\ dx = \sin(\pi x)+\ln|x|$.

$f\,'(1) =$ [ ]

Q3. Solve the initial value problem

$\dfrac{d^{2}y}{dx^{2}}=0\ ;$ $y\,'(0)=2,$ $y\,(0)=1$

$y =$ [ ]