

1. $y = -\sqrt{5e^{t^2} - 4}$

2. (1) DE has a unique solution since $\frac{1}{\sqrt{y}}$ and $\frac{-1}{2y\sqrt{y}}$, its partial derivative with respect to y , are continuous near the initial condition.

(2) Picard's theorem does not apply because $\tan \frac{\pi}{2}$ is not defined.

3. Sheryl's account : \$ $500e$

Sergei's account : \$ $700(e - 1)$

4. $y = -\cos t + \frac{\sin t}{t} + \frac{c}{t}$

5. $x^2 - 3y^2 = c$