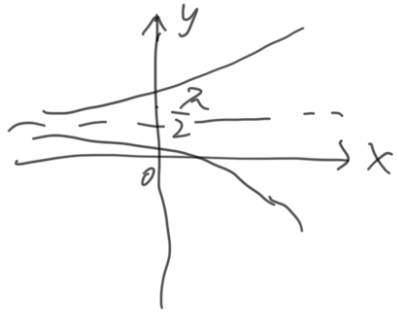
① $\frac{dy}{dx} = 1 - \sin y$ $\quad -1 \le \sin y \le 1$

So. $\frac{dy}{dx} \ge 0$ When $y(0) = \frac{\pi}{2}$, so in $x > 0$, $y > \frac{\pi}{2}$

$\frac{d^2y}{dx^2} = -\cos y$. $y > \frac{\pi}{2}$. so $\frac{d^2y}{dx^2} > 0$

$\frac{dy}{dx} \ge 0$ and $\frac{d^2y}{dx^2} > 0$, and $y(0) = \frac{\pi}{2}$

So



when $y(0) = 0$. $\frac{dy}{dx} > 0$, $\frac{d^2y}{dx^2} < 0$ in $x \in (0, \frac{\pi}{2})$

$\frac{d^2y}{dx^2} > 0$ in $x \in (\frac{\pi}{2}, \frac{3\pi}{2})$