Quiz 1 (Thursday)

a) $y' = \cos y$

$\cos y = 0$ at $\pm \frac{\pi}{2}$ inside $(-\pi, \pi)$

So $y = \frac{\pi}{2}$ and $y = -\frac{\pi}{2}$ are the equilibrium points.
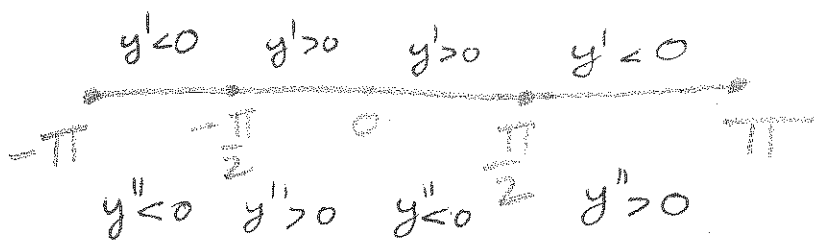
b) $y'' = -(\sin y) y'$

$\sin y = 0$ at $y = 0$, (We are excluding the zeroes at $\pm \pi$ which are not inside the domain for y)

So $y'' = 0$ at $y = 0$, $y = \pm \frac{\pi}{2}$

~~c) $y = -\frac{\pi}{2}$ is~~

Note: 0 isn't an equilibrium pt.

$$y' < 0 \quad y' > 0 \quad y' > 0 \quad y' < 0$$

$$y'' < 0 \quad y'' > 0 \quad y'' < 0 \quad y'' > 0$$

c) $-\frac{\pi}{2}$ is unstable as $y' < 0$ ~~y~~ on the left and $y' > 0$ on the right

Similarly, $\frac{\pi}{2}$ is stable.

d)