

# Quiz 1 (Tuesday)

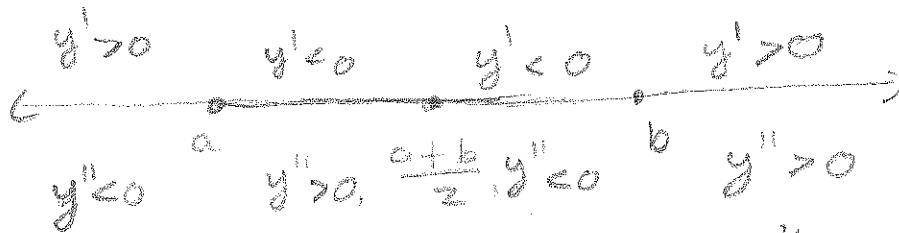
a)  $y' = (y-a)(y-b)$

$y' = 0$  when  ~~$a, b$~~   $y = a$  or  $y = b$  which are the equilibrium points.

b)  $y' = y^2 - (a+b)y + ab$

$$y'' = 2yy' - (a+b)y' = y'(2y - (a+b))$$

$y'' = 0$  when  $y = \frac{a+b}{2}$ , or  $y' = 0$  i.e.  $y = a$  or  $y = b$



Note:  $\frac{a+b}{2}$  isn't an equilibrium point.

c)  $a$  is a stable as  $y'$  is positive to the left and negative to the right of  $a$ .  
 $b$  is unstable as  $y' < 0$  on the left and  $y' > 0$  on the right.

