

Mathematics 172

Quiz #13

You must show your work to get full credit.

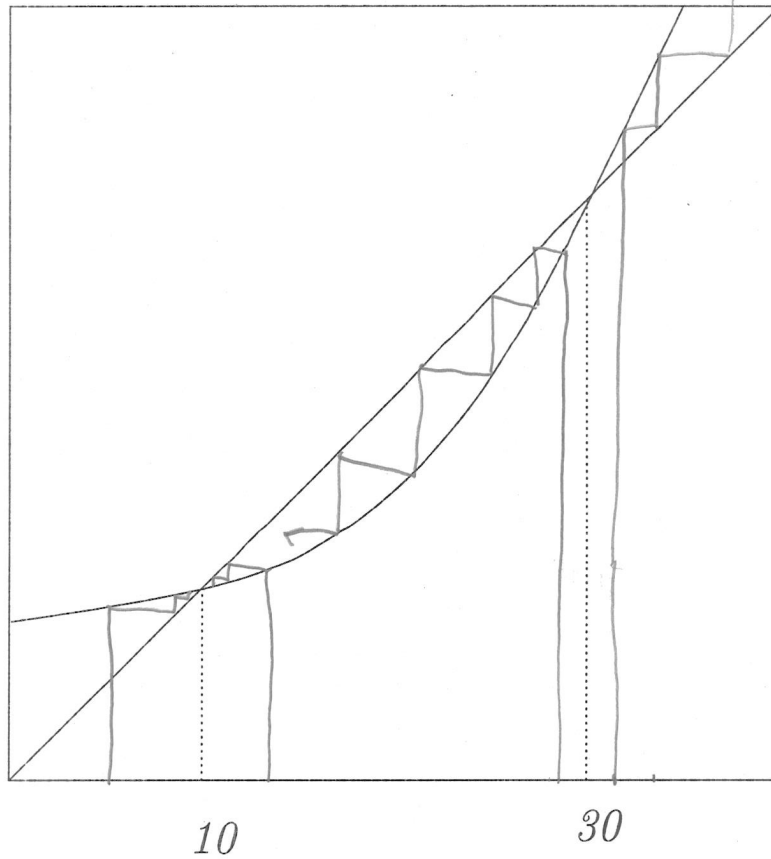


FIGURE 1

- (1) Is the equilibrium point at 10 stable?
- (2) Is the equilibrium point at 30 stable?
- (3) If $N_0 = 20$ approximate $N_{1,000}$.

(1) It is stable. This can be seen in two ways. First the slope at 10 has $|slope| < 1$. Or start near 10 and see that the cobweb goes to 10.

(2) It is unstable. For $|slope| > 1$ or do a cobweb and see that it moves away from 30.

(3) It will go to the stable point at 10 so $N_{1,000} \approx 10$.