

NAME:

Home Work A.
MAP 2302 - Differential Equations

(Q1) Consider the IVP

$$\begin{aligned}y'(t) &= y(y-2)^2(y-10) \\ y(0) &= c.\end{aligned}$$

(a) If $c = 8$ then

$$\lim_{t \rightarrow -\infty} y(t) = \underline{\hspace{2cm}}$$

(b) If $c = 1$ then

$$\lim_{t \rightarrow \infty} y(t) = \underline{\hspace{2cm}}$$

(c) If $c = 10$ then

$$y(10) = \underline{\hspace{2cm}}$$

(d) If $c = 2$ then

$$\lim_{t \rightarrow -\infty} y(t) = \underline{\hspace{2cm}}$$

(Q2) Consider the IVP

$$\begin{aligned}y'(t) &= \sin[ty(y-2)] \\ y(0) &= 1.\end{aligned}$$

TRUE or FALSE

(a) There exists t_1 such that

$$y(t_1) = 0. \quad \underline{\hspace{2cm}}$$

(b) There exists t_1 such that

$$y(t_2) = 2. \quad \underline{\hspace{2cm}}$$

(c)

$$0 < y(t) < 2. \quad \underline{\hspace{2cm}}$$