Mathematics 172

Quiz 11 **Name:** Key

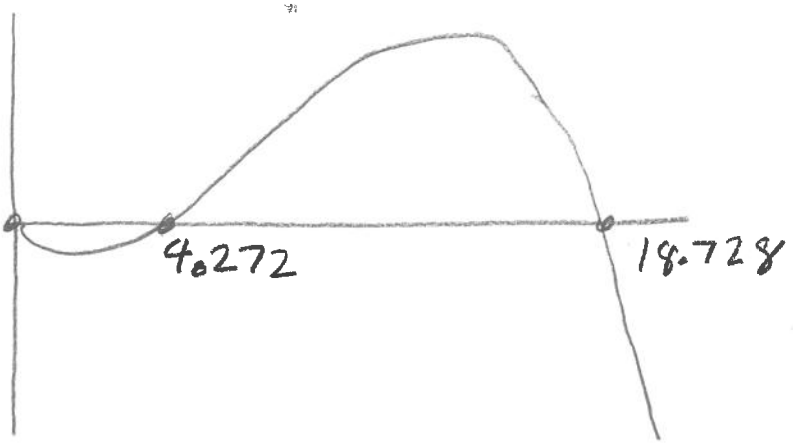
You must show your work to get full credit.

Let $W(t)$ be the number of kilograms of algae in a small after t weeks. Assume the size of the algae population grows by the rule:

$$\frac{dW}{dt} = -0.1W^3 + 2.3W^2 - 8W$$

1. Use your calculator to plot \Y1 = -.1X^3 + 2.3 X^2 - 8X with Xmin = 0 and Xmax = 20 and make a rough sketch of the result here:

Use Zoom
0: ZoomFit

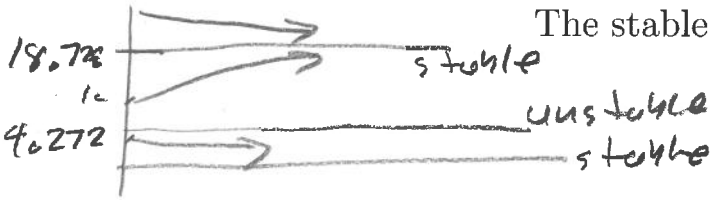


2. Use your calculator and the graph to find the equilibrium points accurate to 3 decimal points.

W=0 is clear. For the other two use 2nd Calc 2:Zero

The equilibrium points are: 0, 4.272, 18.728

3. Which of the equilibrium points are stable?



The stable points are: 0, 18.728

4. If $W(0) = 15$ estimate $W(172)$. $W(172) \approx$ 18.728