Mathematics 122

Quiz 27 Name: Key

You must show your work to get full credit.

The impact, I, of a drug is a function of the dosage, D. For a certain drug the impact is given by the function

$$I(D) = D\sqrt{300 - D}$$

where D is measure in milligrams and $0 \leq D \leq 300$.

1. What is the impact if the dosage is $D = 275$? $I(275) =$ 1375

$I(275) = 275\sqrt{300 - 275}$

$= 275\sqrt{25}$

$= 275(5)$

$= 1375$

2. What dosage maximizes the impact? Explain how you got your answer to get full credit. In particular if you use the calculator's graphing function, explain what you used for \Y1= , Xmin, Xmax and include a sketch of the graph.

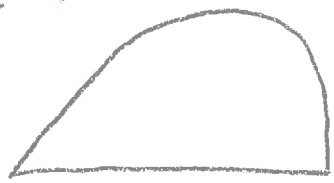
The maximizing dose is 200

\Y1 = $X\sqrt{300 - X}$

Xmin = 0 } as $0 \leq D \leq 300$

Xmax = 300

ZoomFit



2nd calc 4: maximum

X = 199.9997 Y = 2000

so use X = 200 = D