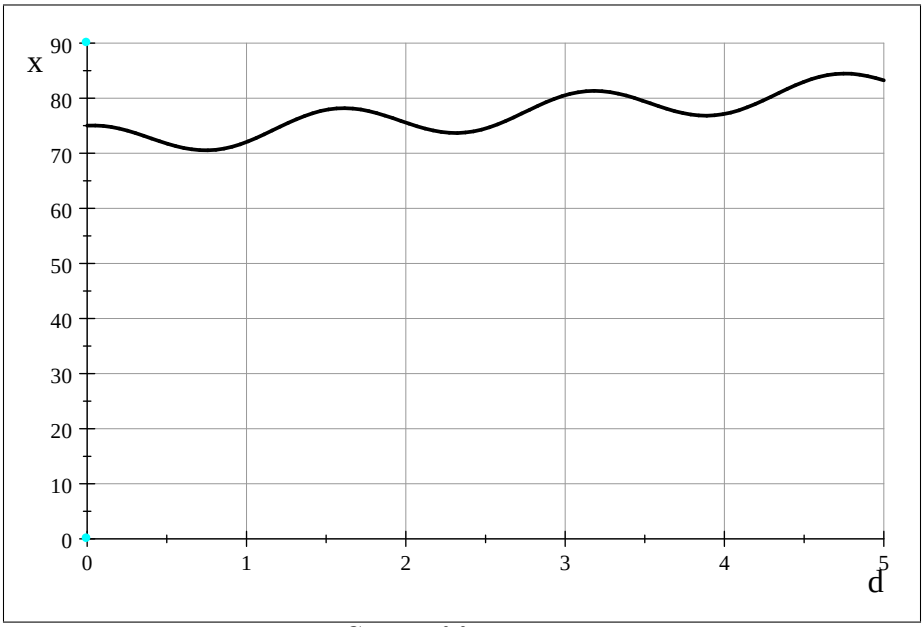
Rewivew Questions for Exam II

Tim has started an exercise program to improve his cardiovscular health, and he is going to do this by jogging at a constant speed each morning. It is known that Tim's heart rate (in beats per minute) will be given by the function

$$H(x) = \sqrt{6x + 3025}$$

where x denotes his diastolic blood pressure (measured in deciliters per second). His resting diastolic pressure is 75 dl per sec. The graph below gives Tim's diastolic pressure x in terms of the distance d in miles that he has jogged from his house.



Graph of function P

1. What is the meaning of the expression $H(60) - H(55)$? (Answer in terms of input and output; do not evaluate the expression.)
2. What is the meaning of the expressions $P(x-1)$ and $P(x)-1$? (Answer in terms of input and output; do not evaluate the expression.)
3. The implied domain for a function is the largest set of real input values for which a function is defined. What is the implied domain for the function H?
4. Does the implied domain for H seem practical to you? Why or why not?
5. Tim's doctor has told him that his diastolic pressure should never go above 90 dl per sec. How does this affect the domain of the function H?
6. Evaluate the expression $H(P(3))$ if it has real-world meaning. If it does not, explain why.
7. Evaluate the expression $P(H(3))$ if it has has real-world meaning. If it does not, explain why.
8. Solve the equation $75 = P(d)$ for the variable d.
9. Does the function P have an inverse? Explain your answer in terms of input and output.
10. Write down the formula that reverses the process represented by H. (Solve $H = \sqrt{6x + 3025}$ for x.)
11. Use the formula you obtained in Part 10 to help solve the equation $59.2 = H(P(d))$ for the variable d.
12. Does the function H have an inverse? Explain your answer in terms of input and output.