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Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) When a person goes into shock, the cardiac output, in liters of blood per minute, decreases. A person's cardiac output is 12 liters per minute when she first goes into shock, and it decreases by 2 liters per minute for every hour that she is in shock. Find a formula for the cardiac output $C$ as a function of $t$, the time in hours since first going into shock.
2. (2 points) Could this data be representative of a linear function? Show work.

| $x$ | 1 | 2 | 5 | 7 | 15 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $y$ | 14 | 12 | 6 | 2 | -14 |

3. (2 points) Find the break-even point if the cost and revenue equations are $C=130 x+12600$ and $R=200 x$, respectively.
4. (2 points) The world population is approximately $P=6.4(1.0126)^{t}$, where $P$ is in billions and $t$ is in years since 2004 .
(a) What is the yearly percent rate of growth of the world population?
(b) What does this model predict for the world population in 2010?
5. (2 points) Find the doubling time of a quantity that is growing exponentially at a rate of $7 \%$ per year.
