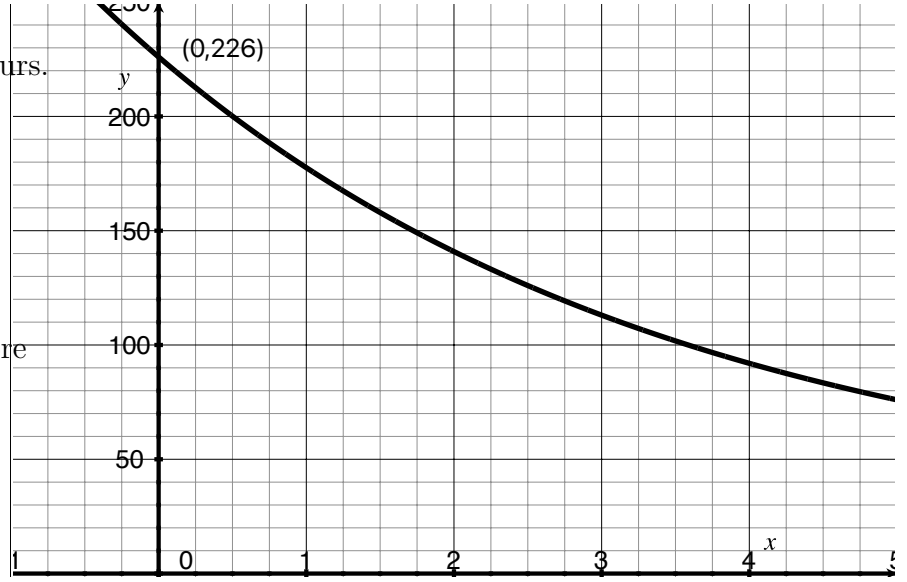# Quiz 3

Show *all* your work. Reasonable supporting work must be shown for any partial credit.

1. Suppose a metal block is cooling so that its temperature (in Celsius) is graphed below, where $x$ is in hours.

   (a) [1] Approximate the temperature after 2 hours.

   (b) [1] Approximate how many hours go by before the temperature of the metal is $100°$?



   (c) [2] Newton's law of cooling lets us know that the temperature of the metal block is of the form $De^{-kx}$ but then vertically shifted. For this particular metal block we know the exponential graph is $200 \cdot 4^{-0.2x}$, but then vertically shifted. Find the algebraic rule for the function graphed here.

2. [3] We know that $\log(x) = -2.1$, $\log(z^2) = 5$. Find $\log(xz^2)$.

3. [3] Find $x$ given $(x+1)^{-1} + \frac{1}{2} = 5$.

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