

Math 111 Quiz #6

1. The substance decays exponentially, which means that the amount of the substance is given by $A = a \cdot b^t$. Since it decays 2% each minute, $b = 0.98$.

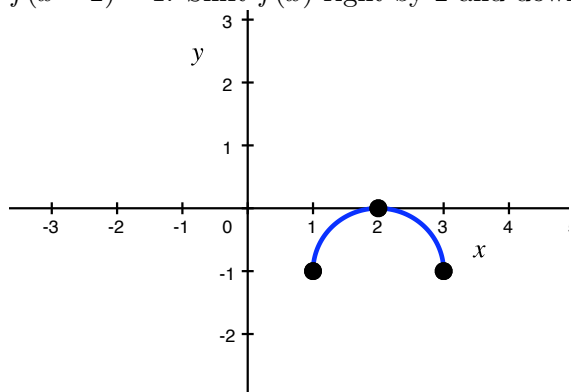
To find the half-life, solve $\frac{1}{2} = 0.98^t \Rightarrow t = \frac{\log(\frac{1}{2})}{\log(0.98)} \approx 34.3096$ minutes

2. (a) For $h(x)$ to be defined, we must have that $x - 3 > 0 \Rightarrow x > 3$.

So, the domain is $x > 3$ or $(3, \infty)$.

- (b) The vertical asymptote will be given by $x = 3$.

3. $f(x - 2) - 1$: Shift $f(x)$ right by 2 and down by 1



4. $g(x + 7) + 1$: Shift left 7 and up by 1

When we shift left by 7, the range will remain the same since it is only the x -coordinates of each point that are changing.

When we shift the function up by 1 unit, the new range will be $-2 \leq y \leq 3$ since for each point, the y -coordinate will increase by 1.

So, the range of $g(x + 7) + 1$ is $-2 \leq y \leq 3$ or $[-2, 3]$.