1. A company stock is worth $5.00. For two weeks its value rises by 8% every day. What is the value of the stock after two weeks?

\[ y = a(b)^x \]
\[ y = 5 \cdot (1 + 0.08)^x \]
\[ y = 5 \cdot (1.08)^x \]

2 weeks = 14 days
\[ y = 5 \cdot (1.08)^{14} \]
\[ y = 14.606 \]

Value of stock is $14.606 after two weeks.

2. The value of a $1500 computer decrease by 25% every year. How long does it take for the computer to be worth $300?

\[ y = a(b)^x \]
\[ y = 1500 \cdot (1 - 0.25)^x \]
\[ y = 1500 \cdot (0.75)^x \]

300 = 1500 \cdot (0.75)^x

0.2 = (0.75)^x \quad \rightarrow \quad \text{cannot find common base,}
\[
\log(0.2) = \log(0.75)^x \quad \text{have to use } \frac{\log 0.2}{\log 0.75}
\]
\[ \log(0.2) = x \cdot \log(0.75) \]
\[ 5.6 = \frac{\log(0.2)}{\log(0.75)} \]

It will take 5.6 years for computer to be worth $300.
3. The rate of deforestation in the Amazon is decreasing exponentially. In two years, it is expected that only 15,000 km$^2$ will be deforested. In five years, the amount deforested should only be 8,000 km$^2$. Given this information, what level of deforestation can be expected in ten years?

NO "a"!

\[ y = a(c)^x \]
\[ (2, 15000) \]
\[ 15000 = a(c)^2 \]
\[ y = a(c)^x \]
\[ (5, 8000) \]
\[ 8000 = a(c)^5 \]

\[ \frac{8000}{15000} = a(c)^{\frac{5}{2}} \]
\[ \frac{8}{15} = c^{\frac{5}{2}} \]
\[ \left( \frac{8}{15} \right)^{\frac{1}{3}} = c^{\frac{5}{2} \times \frac{1}{3}} \]
\[ 0.81 = c \]

\[ y = a(0.81)^x \]
\[ (2, 15000) \]
\[ 15000 = a(0.81)^2 \]
\[ 15000 = 0.6561a \]
\[ 22862 = a \]

\[ y = 22862(0.81)^x \]
\[ x = 10 \text{ years} \]
\[ y = 22862(0.81)^{10} \]
\[ y = 2779 \]

In ten years, the level of deforestation will be 2779 km$^2$. 