1 (10 pts). Find the constants $C$ and $b > 0$ so that the exponential function $f(x) = Cb^x$ has the graph pictured here.

Solution:
1 (10 pts)(Source: 1.4.21-22). From the given points obtain the equations

$$(-1,8) \rightarrow Cb^{-1} = 8$$

$$(1,18) \rightarrow Cb^1 = 18$$

Solve for $C$ in the first to obtain $C = 8b$. Substitute this into the second and solve for $b$:

$$8b^2 = 18$$

$$b^2 = \frac{18}{8} = \frac{9}{4}$$

Since $b > 0$,

$$b = \sqrt{\frac{9}{4}} = \frac{3}{2}$$

and

$$C = 8b = 8 \times \frac{3}{2} = 12.$$ 

That is, $f(x) = 12 \left(\frac{3}{2}\right)^x$. (done)