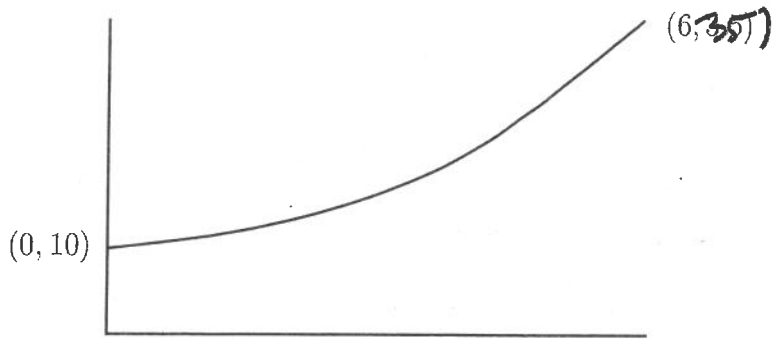


You must show your work to get full credit.

1. Find an exponential function which fits the graph:



$$\begin{aligned} y &= P_0 a^x \\ &= 10 a^x \\ y(6) &= 10 a^6 = 35 \\ a^6 &= \frac{35}{10} = 3.5 \\ a &= (3.5)^{\frac{1}{6}} = \\ &= 1.232 \end{aligned}$$

$$y = 10 (1.232)^x$$

2. Let A and t be related by

t	0	1	2	3
A	20.0	16.0	12.8	10.24

- (a) Explain why this data can come from an exponential function, showing the calculations you used.

The ratios are

$$\begin{aligned} \frac{A(1)}{A(0)} &= \frac{16}{20} = .8 \\ \frac{A(2)}{A(1)} &= \frac{12.8}{16.0} = .8 \\ \frac{A(3)}{A(2)} &= \frac{10.24}{12.8} = .8 \end{aligned}$$

The ratios are constant, so it is exponential.

- (b) Give a formula for A in terms of t .

$$A(t) = 20(.8)^t$$

$$A(t) = A_0 a^t = 20(.8)^t$$

as $A_0 = A(0) = 20$
and $a = \text{ratio} = .8$