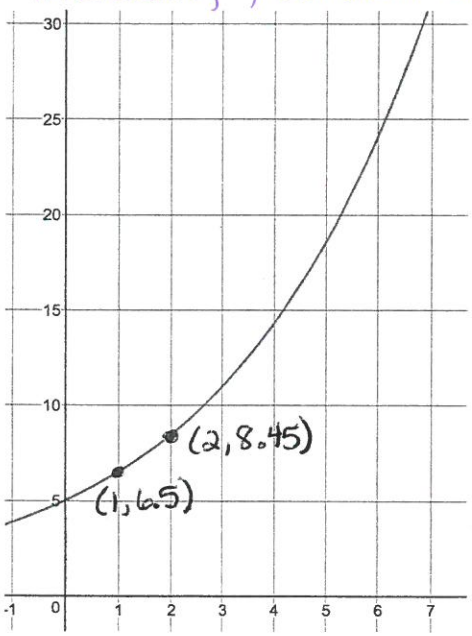
For each example below:

A. Identify the type of function it could be.
B. On what interval or intervals is the function increasing or decreasing, and which way is the graph concave?
C. From your experience, what relationship in the real world could be modeled by a function with this shape of graph?
D. Find the particular equation for the function if the given points are on the graph.
E. Confirm that your equation gives the graph shown (check on graphing calculator).

1. increasing, concave up



$y = a \cdot b^x$

$6.5 = a \cdot b^1$

$8.45 = a \cdot b^2$

$\div$

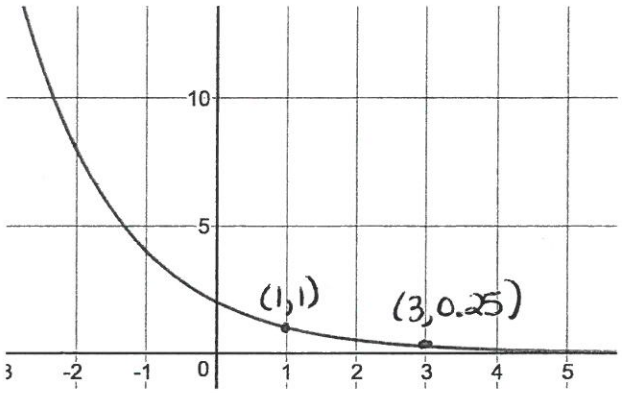
$1.3 = b$

$6.5 = a \cdot 1.3$

$a = 5$

$y = 5 \cdot 1.3^x$

2. decreasing, concave up



$1 = a \cdot b^1$

$0.25 = a \cdot b^3$

$4 = b^{-2}$

$\sqrt[-2]{4} = b$

$b = .5$

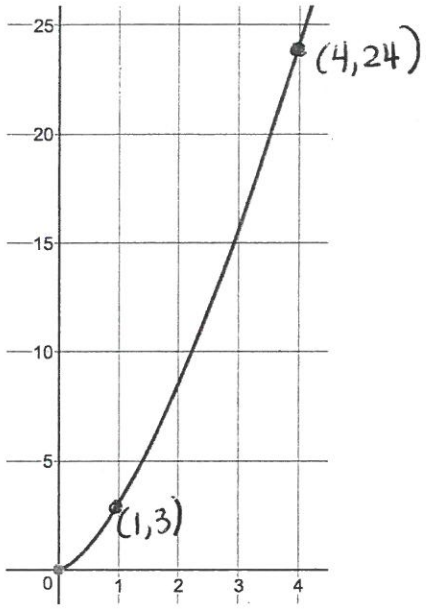
$1 = a(.5)$

$a = 2$

$y = 2 \cdot (.5)^x$

increasing, concave up

3.



$y = ax^b$

$24 = a \cdot 4^b$

$3 = a \cdot 1^b$

$8 = 4^b$

$\log 8 = b \cdot \log 4$

$b = 1.5$

$24 = a \cdot 4^{1.5}$

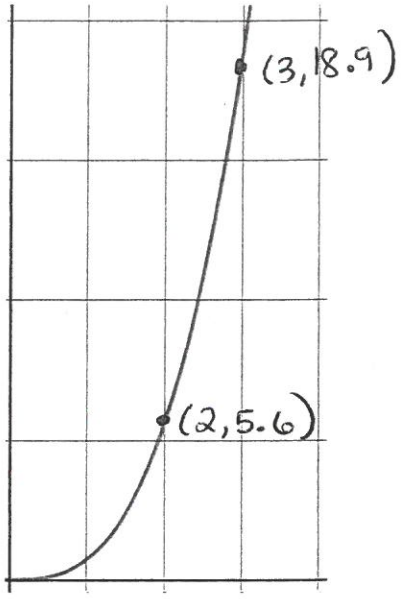
$24 = a \cdot 8$

$3 = a$

$y = 3 \cdot x^{1.5}$

increasing, concave up

4.



$18.9 = a \cdot 3^b$

$5.6 = a \cdot 2^b$

$3.375 = \left(\frac{3}{2}\right)^b$

$\log 3.375 = b \cdot \log \frac{3}{2}$

$b = 3$

$5.6 = a \cdot 2^3$

$5.6 = a \cdot 8$

$a = .7$

$y = .7 \cdot x^3$