

**Practice Regents problems #8**

AII-F.BF.6 Represent and evaluate the sum of a finite arithmetic or finite geometric series, using summation (sigma) notation. For geometric series:

$$\sum_{k=1}^n a_k = a_1 + a_2 + \dots + a_n = a_1 \left( \frac{1 - r^n}{1 - r} \right)$$

1. Given the sequence  $a$ :  $4\frac{1}{2}$ , 6, 8,  $10\frac{2}{3}$ , ...
  - (a) State whether the sequence is arithmetic, geometric, or neither. Justify your answer by showing the calculation of the common difference  $d$  or ratio  $r$ .
  - (b) Write a recursive formula for  $a$ .
  - (c) Write an explicit formula for the sequence.
  - (d) Find the sum of the first eight terms the sequence.
2. Express each of the following in simplest radical form.
  - (a)  $(4x)^{\frac{1}{2}}$
  - (b)  $9x^{-\frac{1}{2}}$

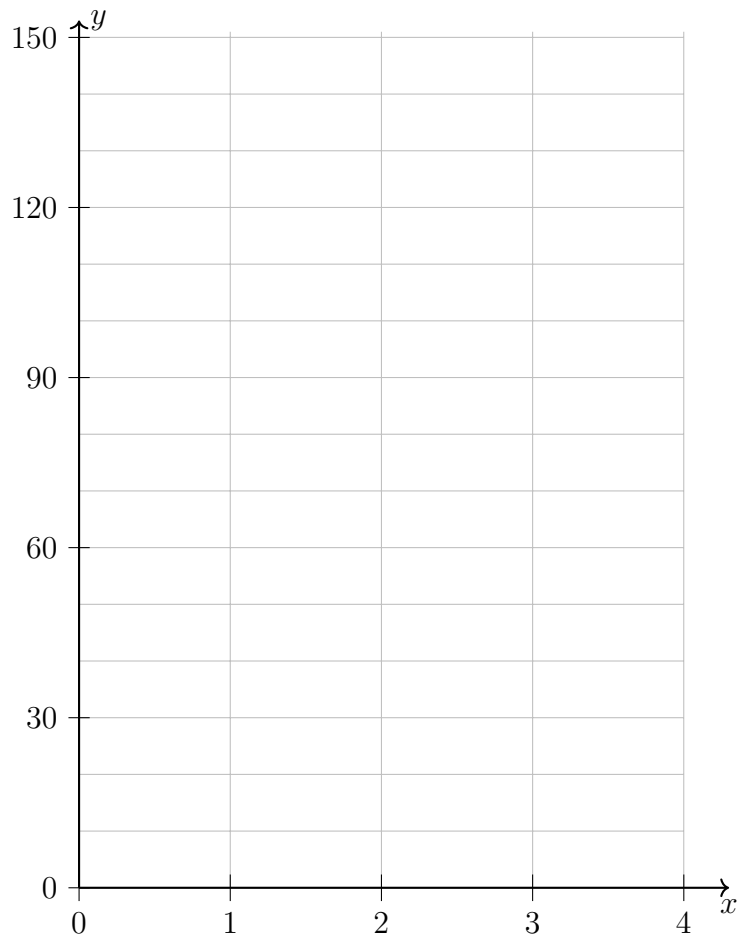
AII-F.LE.2: Construct a linear or exponential function symbolically given: a graph, a description of the relationship, or two input-output pairs (include reading these from a table).

3. Two functions are compared, a linear function  $f(x)$  and the exponential function  $g(x)$ .

(a) Fill out the table for  $f(x)$  and write an explicit formula for the linear function.

Days	0	1	2	3	4
Area	30		60		

- (b) The geometric function is defined by  $g(x) = 20 \cdot e^{\frac{x}{2}}$ . On the grid below, sketch both functions,  $f(x)$  and  $g(x)$ .



- (c) Mark the intersection of the two functions on the graph as an ordered pair, rounding to the *nearest tenth*.