

7. [8 points] Some values of the function  $f(x)$  are given in the table below.

$x$	-2	0	2	5	8	10	15	18	20	21
$f(x)$	54.22	30.50	17.16	7.24	13.84	18.24	29.24	5	-9	-20

Note that all values in the table have been rounded to two decimal places. You must **show your work** for each part of this problem, and write your final answers *in the spaces provided*.

- a. [3 points] Find a formula for  $f(x)$  valid for  $-2 \leq x \leq 5$ , assuming that  $f$  is exponential on the interval  $[-2, 5]$ .

$$f(x) = \underline{\hspace{10cm}}$$

- b. [2 points] Find a formula for  $f(x)$  valid for  $5 \leq x \leq 15$ , assuming that  $f(x)$  is linear on the interval  $[5, 15]$ .

$$f(x) = \underline{\hspace{10cm}}$$

- c. [3 points] Show that  $f(x)$  cannot be concave down on the interval  $[15, 21]$ . Make sure any relevant calculations are clearly shown, and write a *brief* sentence explaining your reasoning.

Calculations

Reasoning

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