

Problem 1

Inspired by page 32 #71

Profit/Cost/Revenue Models

$$C(x) = 93 \cdot x + 35000$$

$$R(x) = 135 \cdot x$$

Tasks

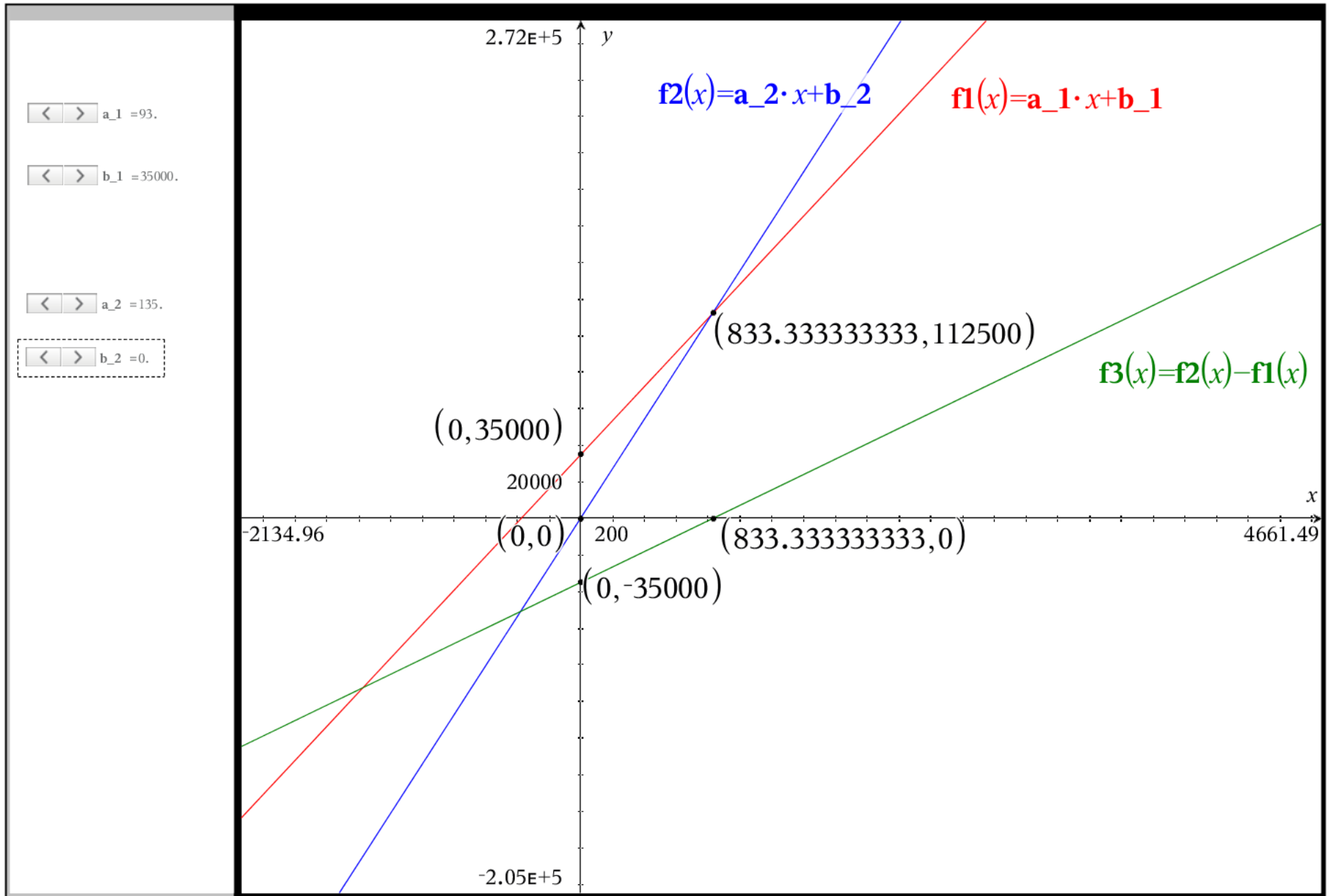
- 1) Plot the linear system related to this particular scenario
- 2) Determine the point of intersection using paper and pencil methods
- 3) Confirm point of intersection using technology

Graphing calculator, advanced scientific calculators, Geogebra, Desmos

4) If  $x$  corresponds to number of MP3 players sold in a week,  $C(x)$  refers to the cost of producing  $x$  MP3 players, and  $R(x)$  equals the revenue generated from selling  $x$  MP3 players, then determine a  $P(x)$  function that models this company's profits

5) State and describe the following points for each of the functions

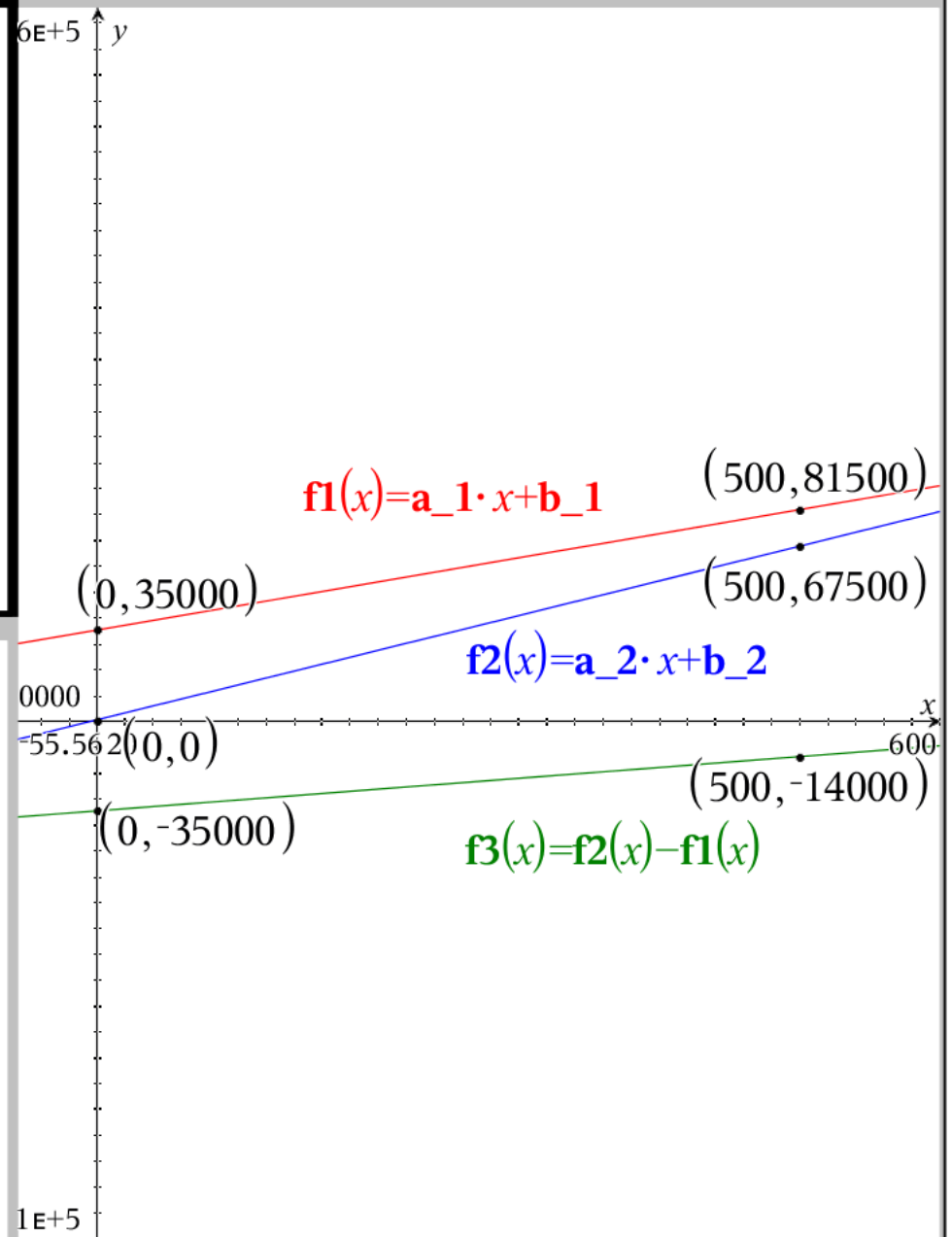
- 5a)  $y$  intercepts of the functions
- 5b)  $x$  intercepts of the functions
- 5c) point of intersection of the  $R(x)$  and  $C(x)$  functions



Describe the behavior of each of the following models over the given intervals. Support the description with the provided graphs of the models

What is this company's status for values of  $x$  that lie within  $[0, 500]$ ?

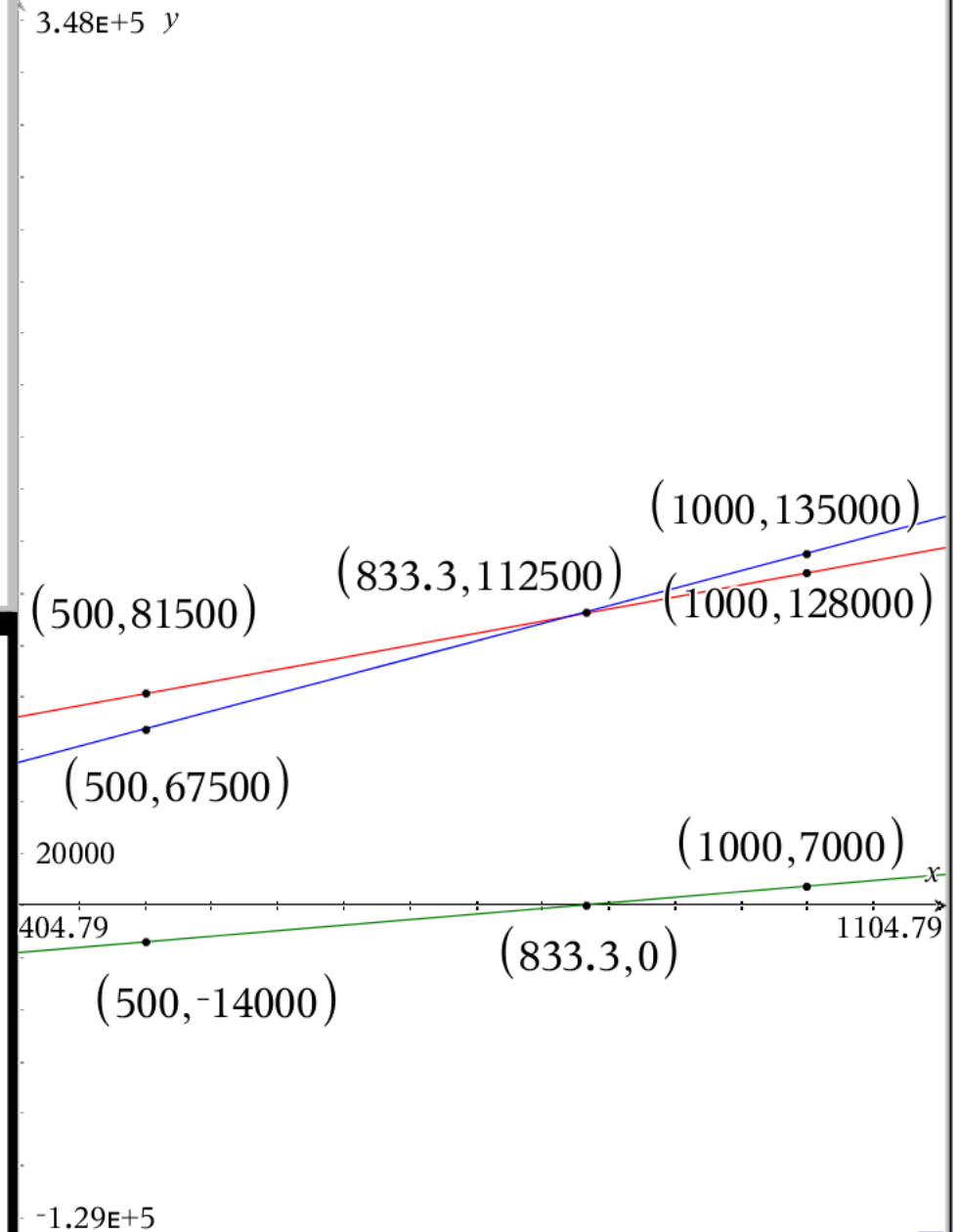
Be specific and mention functions by name  $C(x)$ ,  $R(x)$ , and  $P(x)$



Describe the behavior of each of the following models over the given intervals. Support the description with the provided graphs of the models

What is this company's status for values of  $x$  that lie within  $[500, 1000]$ ?

Be specific and mention functions by name  $C(x)$ ,  $R(x)$ , and  $P(x)$

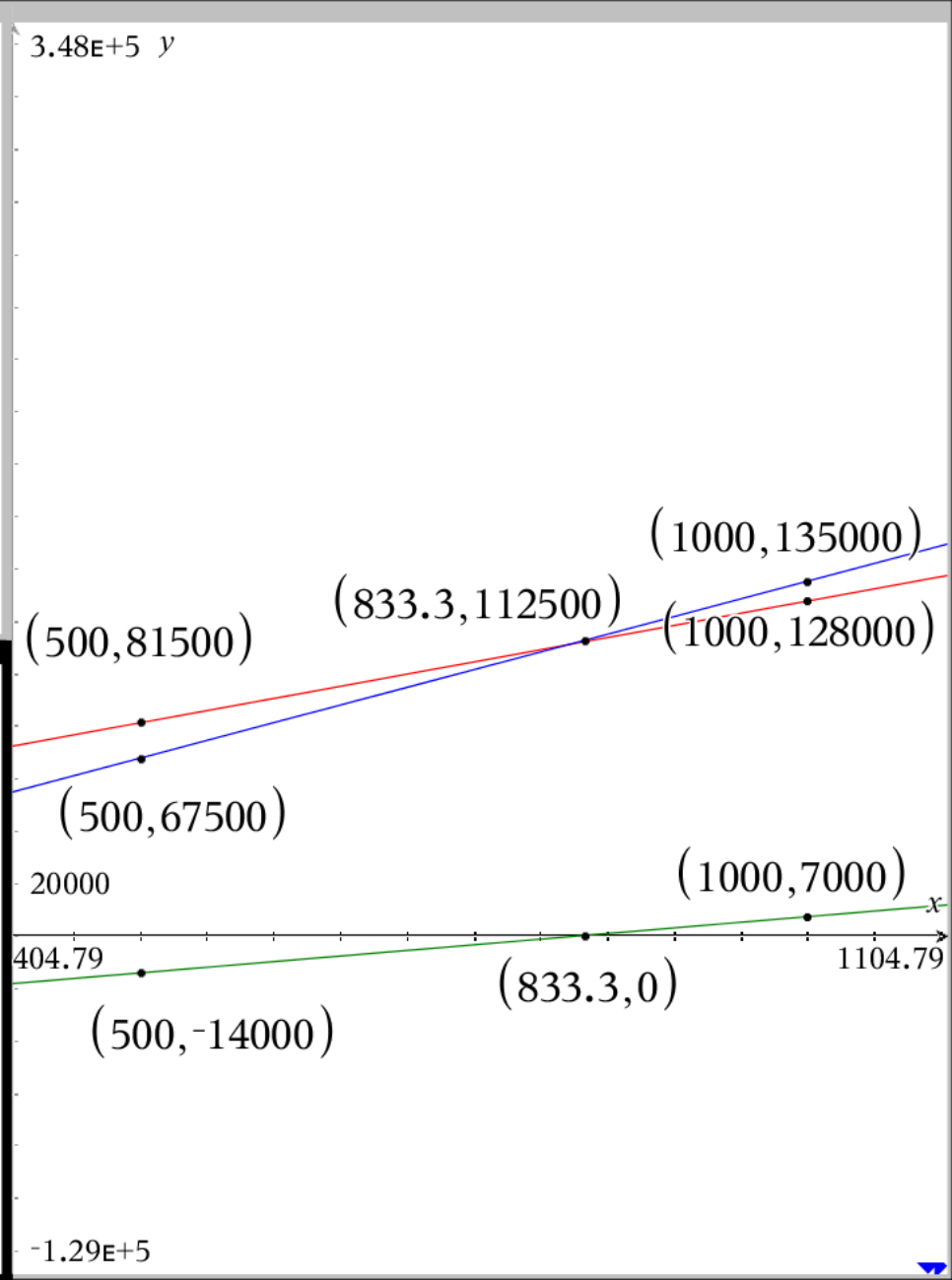


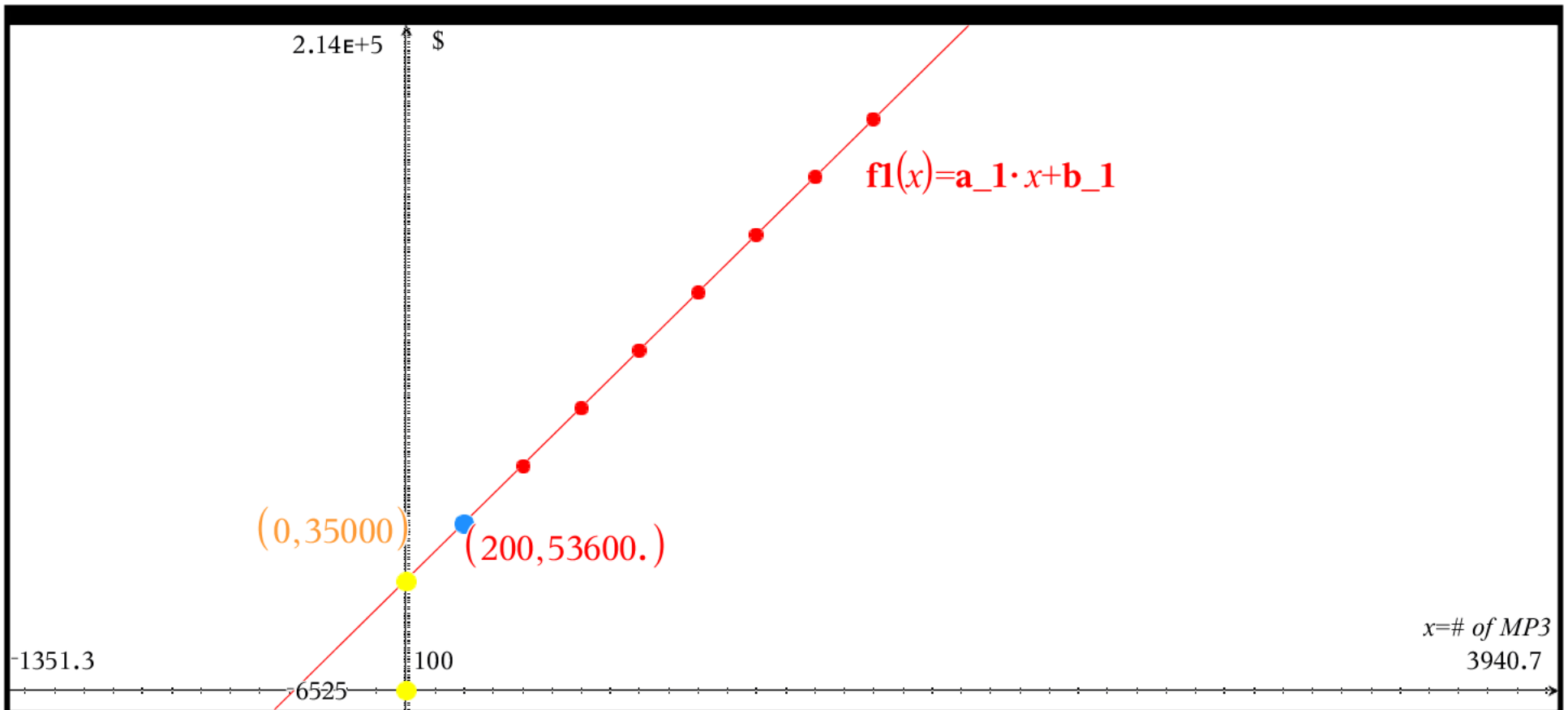
Describe the behavior of each of the following models over the given intervals. Support the description with the provided graphs of the models

What is this company's status for values of  $x$  that are greater than 1000 ?

Be specific and mention functions by name  $C(x)$ ,  $R(x)$ , and  $P(x)$

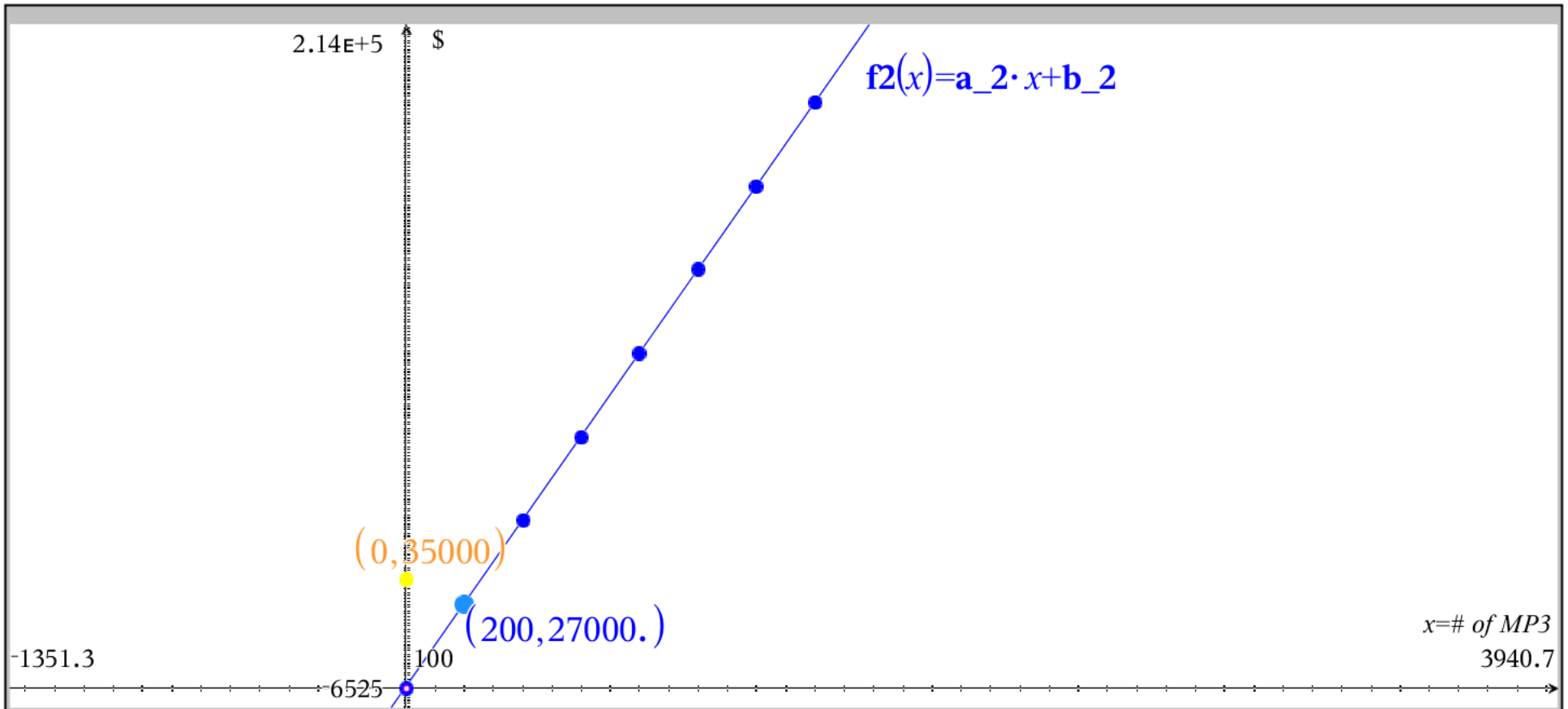
a\_1 =93.  
  b\_1 =35000.  
  particular\_x2 =1.Ε3  
  a\_2 =135.  
  b\_2 =0.





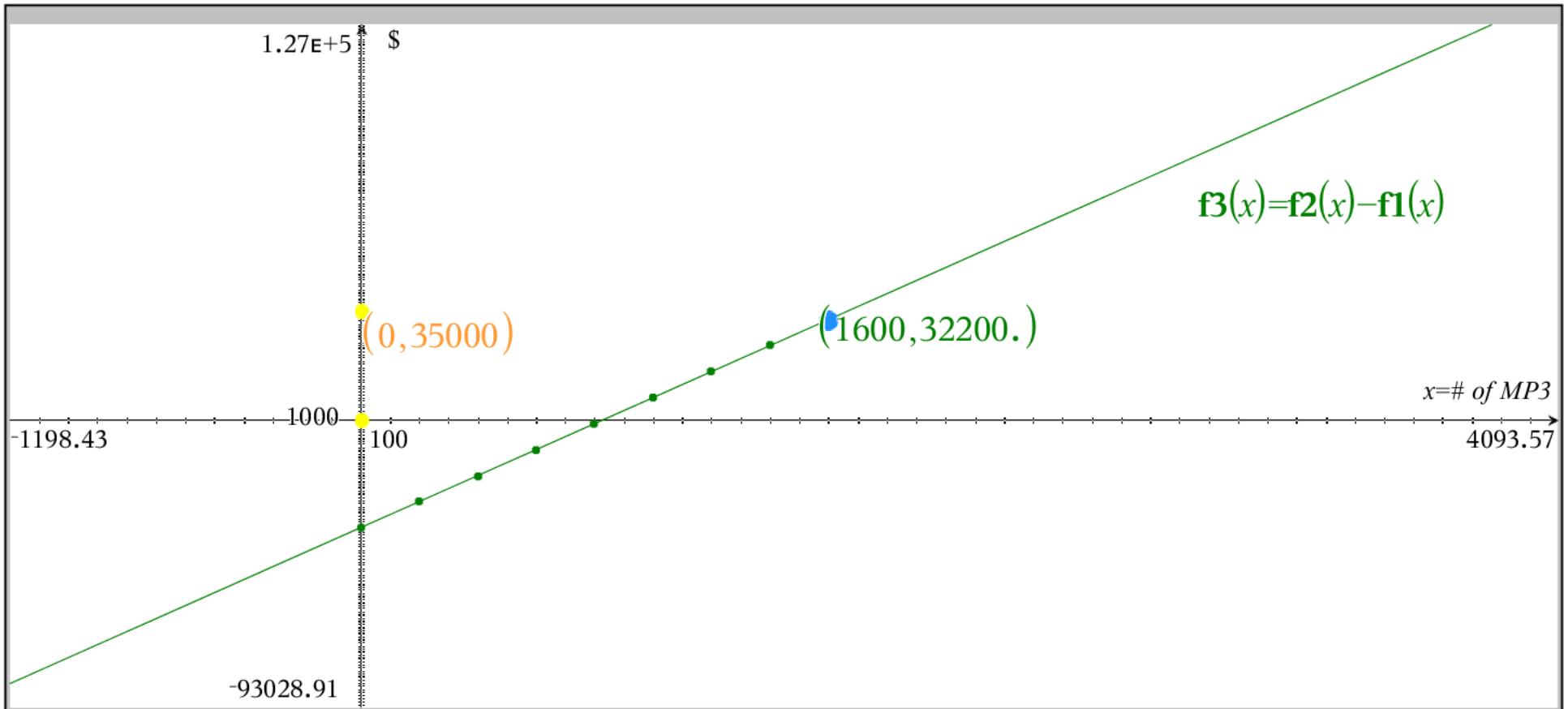
	A	B	C	D	E	F	G	H	I	J	K	L
1	0	35000	x	0	200	400	600	800	1000	1200	1400	1600
2	0	0	f1(x)	35000.	53600.	72200.	90800.	109400.	128000.	146600.	165200.	183800.
3			f2(x)	0.	27000.	54000.	81000.	108000.	135000.	162000.	189000.	216000.
4			f3(x)	-35000.	-26600.	-18200.	-9800.	-1400.	7000.	15400.	23800.	32200.

E2 =f1(e1)



	A	B	C	D	E	F	G	H	I	J	K	L
=												
1	0	35000	x	0	200	400	600	800	1000	1200	1400	1600
2	0	0	f1(x)	35000.	53600.	72200.	90800.	109400.	128000.	146600.	165200.	183800.
3			f2(x)	0.	27000.	54000.	81000.	108000.	135000.	162000.	189000.	216000.
4			f3(x)	-35000.	-26600.	-18200.	-9800.	-1400.	7000.	15400.	23800.	32200.

E2 =f1(e1)



	A	B	C	D	E	F	G	H	I	J	K	L
x_3		y_3										
=												
1	0	35000	x	0	200	400	600	800	1000	1200	1400	1600
2	0	0	f1(x)	35000.	53600.	72200.	90800.	109400.	128000.	146600.	165200.	183800.
3			f2(x)	0.	27000.	54000.	81000.	108000.	135000.	162000.	189000.	216000.
4			f3(x)	-35000.	-26600.	-18200.	-9800.	-1400.	7000.	15400.	23800.	32200.



