Social Media Star Solution

Question 1

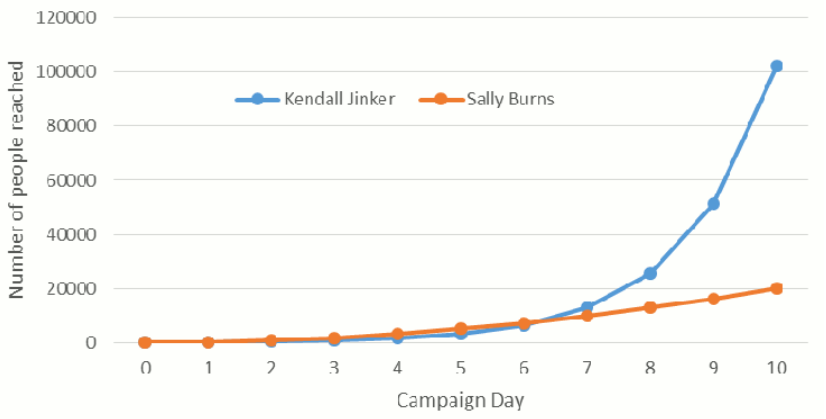
Kendall Jinker promotes follow this model $y = 100 \text{ x } 2^x$and Sally Burns' social media model is $y = 200x^2$. The first model is a function with quadratic growth and the second model is given as a function with exponential growth. Competitors have a campaign scheduled to start in 10 days, so x varies from 0 to 10 (x is number of days). Plot the reach of each star's social media over a 10 day campaign.

Using the two models given above, you can fill out the table values for each celebrity (or do it using spreadsheet software on a computer, tablet or graphics calculator).

Day Number	Kendall Jinker	Sally Burns
0	100	0
1	200	200
2	400	800
3	800	1800
4	1600	3200
5	3200	5000
6	6400	7200
7	12800	9800
8	25600	12800
9	51200	16200
10	102400	20000

(2 marks)

With these values students can plot the results as a graph.



(1 mark)

Students should see that Sally Burns reaches more people than Kendall Jinker over the first few days of the campaign, but then Kendall shoots ahead and is more than five times Sally Burns' total by the end of the 10th day.

The reason is due to different types of growth for the two celebrities.

Now calculate the profit for the campaign:

Profit = percentage conversion x number of people x profit / converted person – celebrity fee

Profit=0.02 x 102400 x $500 -$180,000

Profit= $844,000 (1 mark)

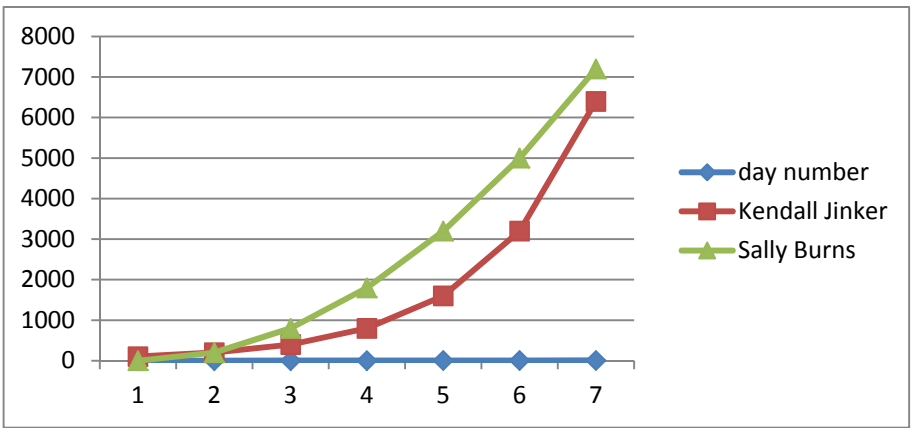
Question 2

In this task the campaign lasts 6 days so students should fill out the table values for each celebrity. Kendall Jinker promotes follow this model $y = 100 \text{ x } 2^x$ and Sally Burns' social media model is $y = 200x^2$.

Day Number	Kendall Jinker	Sally Burns
0	100	0
1	200	200
2	400	800
3	800	1800
4	1600	3200
5	3200	5000
6	6400	7200

(2 marks)

Now students should plot the graph.



(1 mark)

Students now should decide for Sally Burns, and calculate the profit.

Profit = percentage conversion x number of people x profit / converted person – celebrity fee

Profit=0.02 x 7200 x $500 -$50,000

Profit= $22,000 (1 mark)

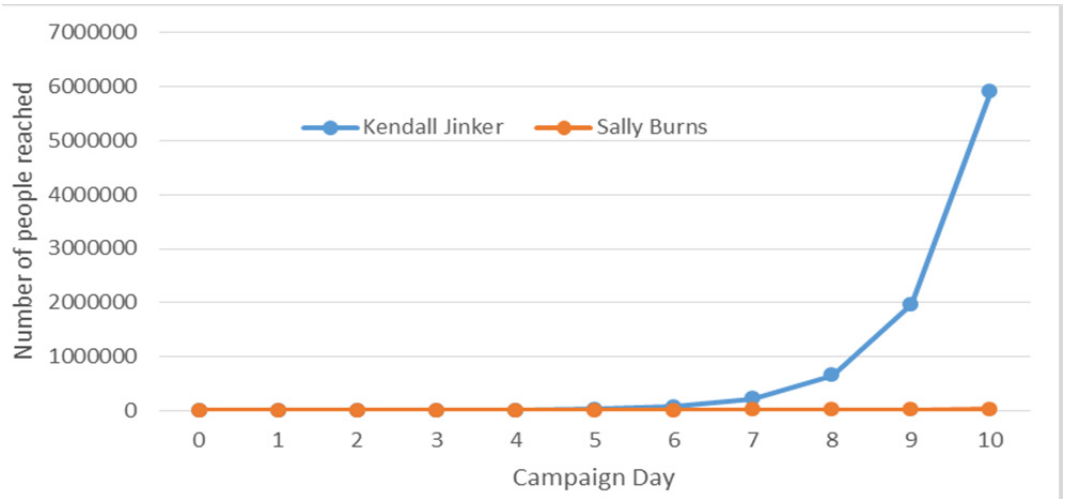
Question 3

In this question there are different types of growth from the first scenario. We know that we have 10 days to reach as many people as possible so the value of x is 10. Now, as in the first question, fill out the table values for each celebrity.

Day Number	Kendall Jinker	Sally Burns
0	100	0
1	300	200
2	900	800
3	2700	1800
4	8100	3200
5	24300	5000
6	72900	7200
7	218700	9800
8	656100	12800
9	1968300	16200
10	5904900	20000

(2 marks)

With these values students can plot the results as a graph.



(1 mark)

From the graph we see that Kendall Jinker is an even bigger star.

Now calculate the profit for the campaign:

Profit = percentage conversion x number of people x profit / converted person – celebrity fee

Profit=0.02 x 5904900 x $500 -$300,000
Profit= $58,549,000 (1 mark)