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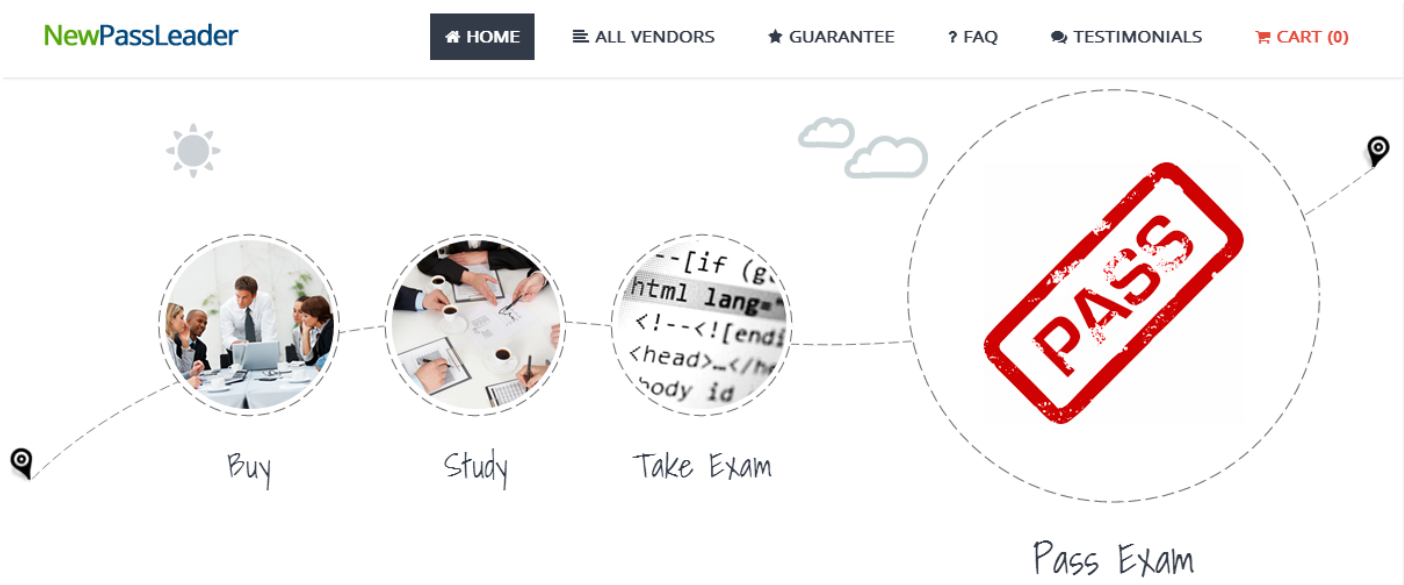

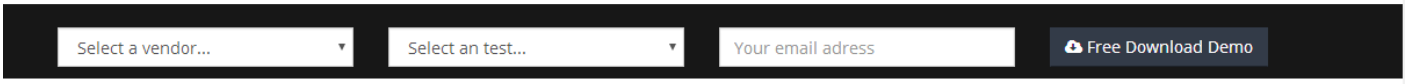

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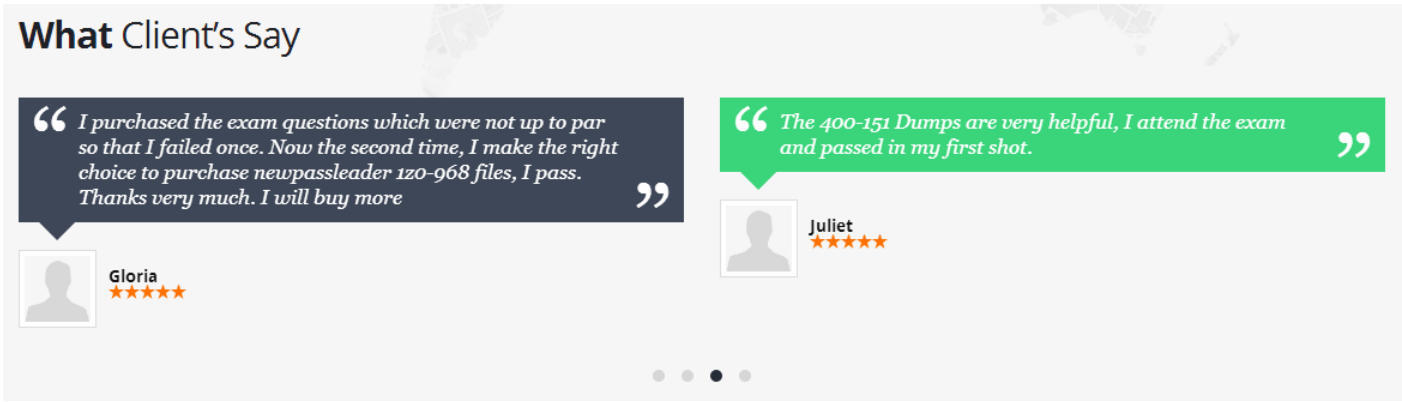

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Exam : **Applied-Algebra**

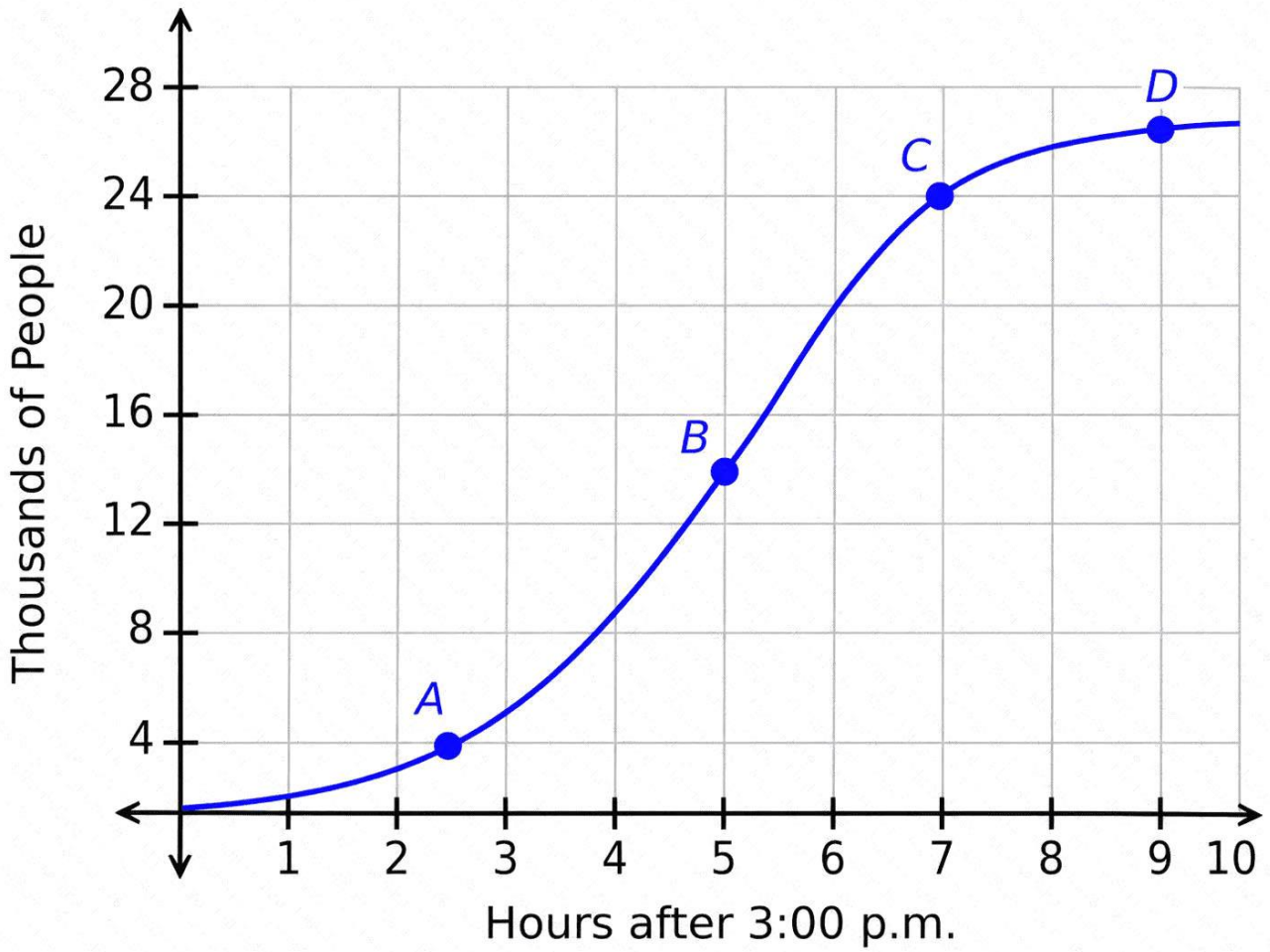
Title : WGU Applied Algebra FXO2 PFXP C957

Vendor : WGU

Version : DEMO

NO.1 The function d(x)=14+65xrepresents the distance, in meters, from a tower to an object at time x, in seconds.
What is the value of d(1.5)?
A. 0.19
B. 65
C. 86
D. 111.5
Answer: D
Explanation:
We are given the function:
d(x)=14+65x
This is a linear function because it has the form:
d(x)=mx+b
where 65is the rate of change and 14is the starting value.
We need to find:
d(1.5)
That means substitute x=1.5into the function:
d(1.5)=14+65(1.5)
Now multiply:
65(1.5)=97.5
Then add:
d(1.5)=14+97.5
d(1.5)=111.5
So the distance from the tower to the object at 1.5seconds is:
111.5 " meters "

NO.2 The graph shows the number of people at an event venue after 3:00 p.m., in thousands.
Which rate of change is the greatest?



A. The instantaneous rate of change at point D
B. The average rate of change from point A to point C
C. The average rate of change from point C to point D
D. The instantaneous rate of change at point C
Answer: D
Explanation:
This graph represents a logistic growth function, which has an S-shaped curve:
Slow growth at the beginning (near point A)
Rapid growth in the middle (near point B and C)
Slowing growth at the end (near point D)
Key Concept:
Instantaneous rate of change = slope of the tangent line at a single point Average rate of change = slope between two points Analyze the graph:
At point A # slope is small (slow increase)
From A to C # increasing but not maximum
At point C # curve is steepest # maximum slope
From C to D # curve flattens # smaller slope
At point D # slope is very small (almost flat)
Conclusion:
The greatest rate of change occurs where the graph is steepest, which is at:
" Point C "

NO.3 The number of people auditioning for a game show is expected to be 4 times the number of people who auditioned last year. The function A(t) can be used to model the situation, where t represents the number of people who auditioned last year and A represents the number of people expected to audition this year.
Which quantity represents the number of people expected to audition this year, given that 330 people auditioned last year?

A. A(1,320)=330

B. A(330)=1,320

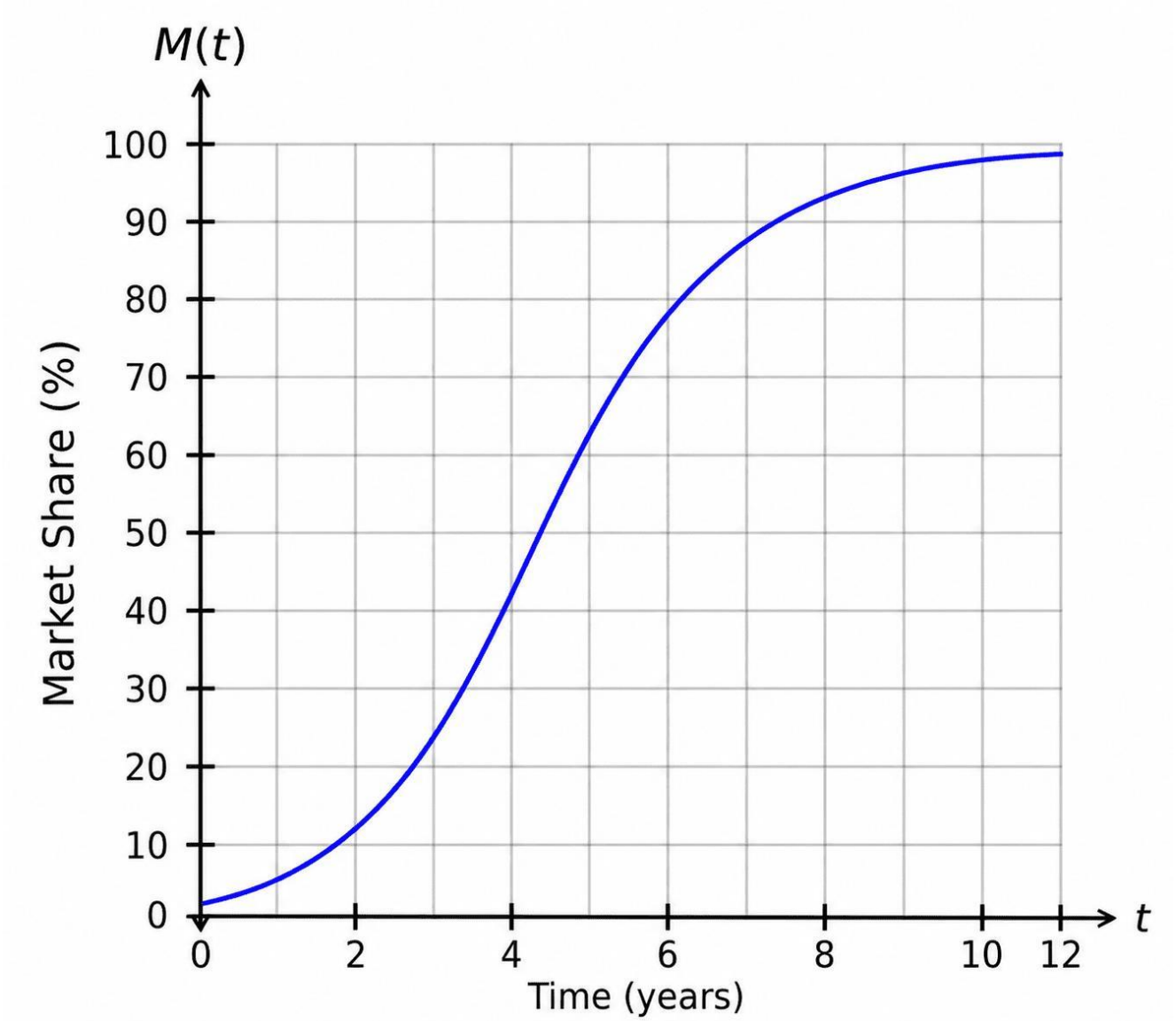
C. A(330)=82

D. A(82)=330

Answer: B

Explanation:
We are told that the number of people expected to audition this year is 4 times the number of people who auditioned last year.
Let:
t=number of people who auditioned last year
and
A(t)=number of people expected to audition this year
Since this year's number is 4 times last year's number, the function is:
A(t)=4t
The question says that 330 people auditioned last year, so:
t=330
Now substitute 330 into the function:
A(330)=4(330)
A(330)=1320
So, the correct function notation is:
A(330)=1,320
This means: when 330 people auditioned last year, 1,320 people are expected to audition this year.
Therefore, the correct answer is:
B

NO.4 A new company just launched and is using the function M(t)to predict its market share after tyears. The graph of M(t)is shown.



When should the company expect to have a market share of 60%?

A. After 2 years

B. After 5 years

C. After 6 years

D. After 6.6 years

Answer: D

Explanation:

The function M(t)represents the company's predicted market share after tyears.

The horizontal axis represents:

t= " time in years "

The vertical axis represents:

M(t)= " market share percentage "

We need to find when the company's market share reaches:

60%

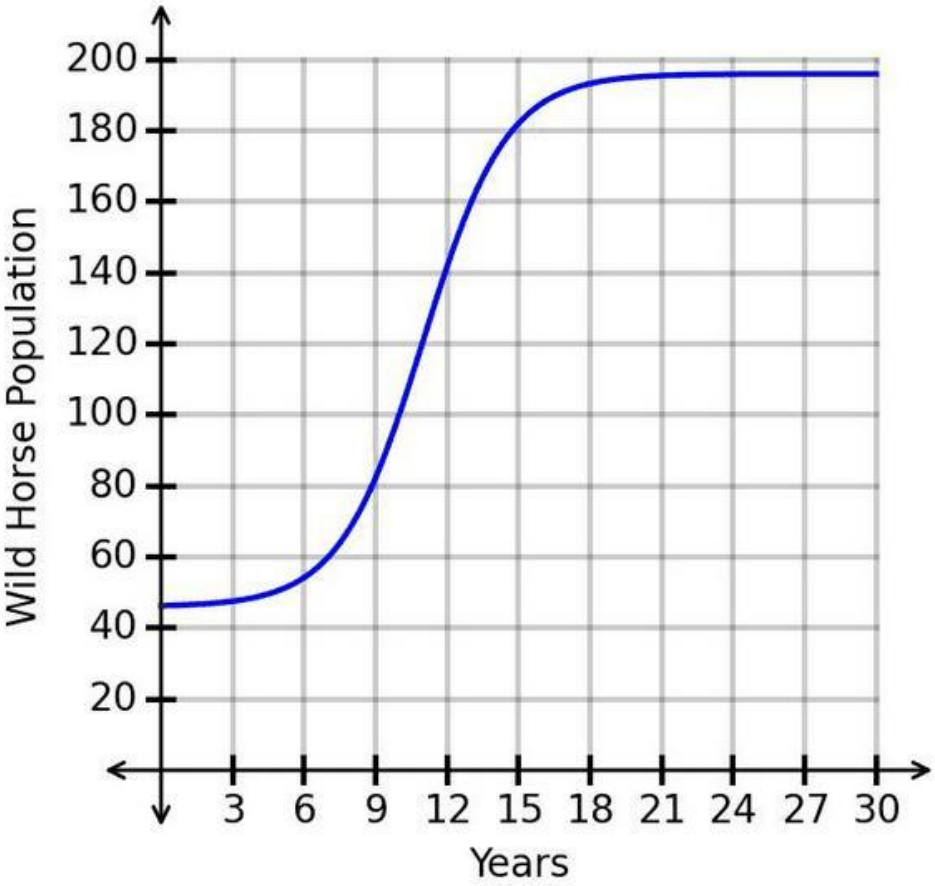
To answer this from the graph:

Locate 60on the vertical axis.

Move horizontally until reaching the blue curve.

Move downward to the horizontal axis to read the corresponding time.
From the graph, the blue curve reaches 60%a little after 6years, approximately at:
t=6.6
So the company should expect to have a market share of 60%after about:
6.6 " years "

NO.5 The number of wild horses in a federal park is represented by the logistic function f(x), whose graph is shown, where xrepresents the number of years since the park was established and f(x)represents the wild horse population in a given year.



How does the number of wild horses change as time progresses from year 1 to year 9?

A. The number of wild horses increases faster and faster.

B. The number of wild horses decreases slower and slower.

C. The number of wild horses decreases faster and faster.

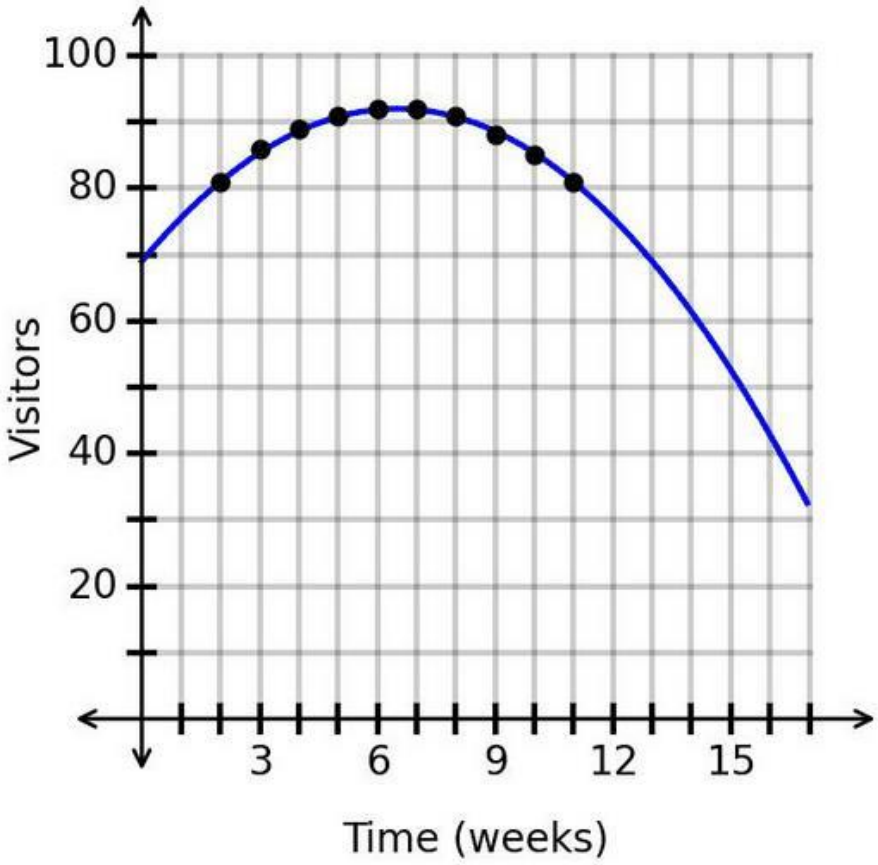
D. The number of wild horses increases slower and slower.

Answer: A

Explanation:
The graph is a logistic growth function.
A logistic function often has an S-shape. It begins by increasing slowly, then increases faster and faster, and later levels off as it approaches a maximum carrying capacity.
From year 1 to year 9, the graph is rising and becoming steeper.
That means:
" the wild horse population is increasing "
and the slope is getting larger, so:

" the population is increasing faster and faster "
Therefore, the correct answer is:
(" A ")

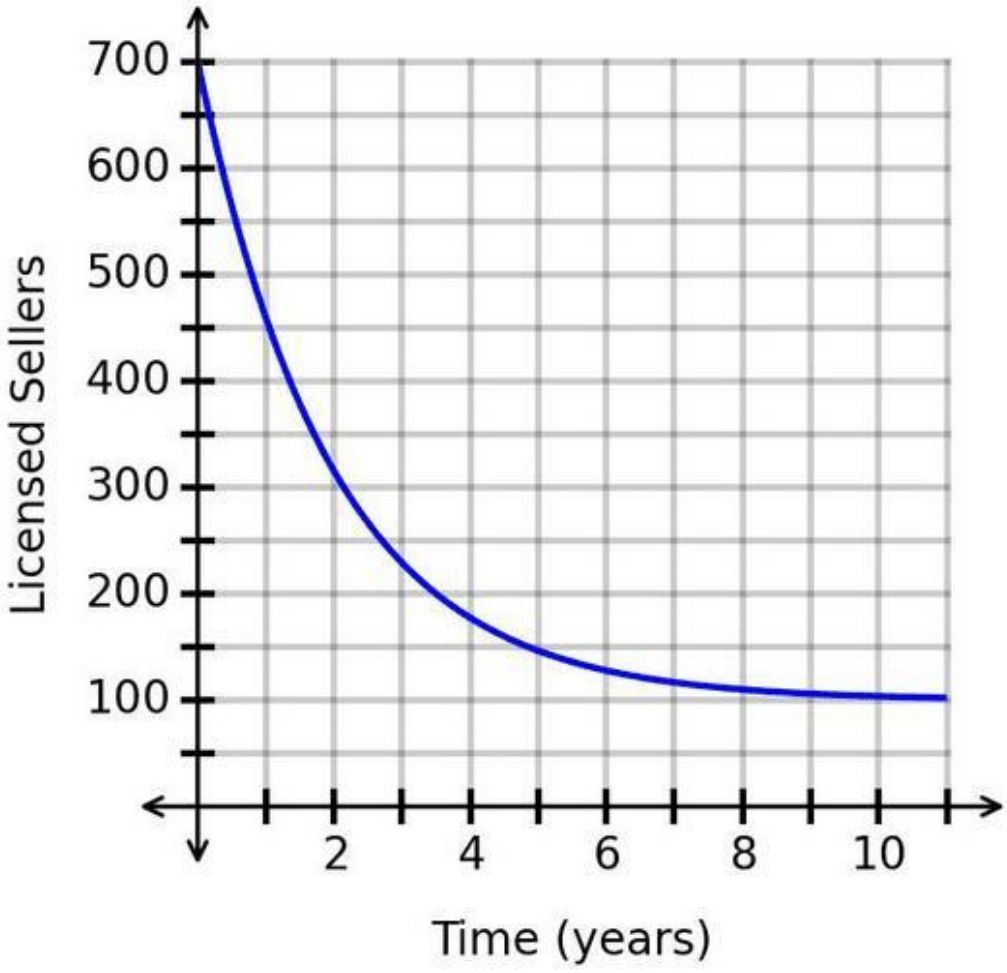
NO.6 The scatterplot shows data on the number of visitors to a resort each week since opening. A regression function is graphed with r^2=0.99. The predicted number of visitors after 16.4weeks is 38.6.



Is this prediction appropriate?
A. No. The r^2value indicates a strong fit, but x=16.4is more than 50%of the range beyond the maximum value.
B. No. The r^2value indicates a moderate fit, but x=16.4is more than 25%of the range beyond the maximum value.
C. Yes. The r^2value indicates a strong fit, and x=16.4is within 50%of the range of the maximum value.
D. Yes. The r^2value indicates a moderate fit, and x=16.4is within 25%of the range of the maximum value.
Answer: A
Explanation:
The regression model has:
r^2=0.99
This means the model is a very strong fit for the data because 0.99is close to 1.
However, a strong r^2value does not automatically make every prediction appropriate. We also have to check whether the x-value is within a reasonable extrapolation range.

The data shown on the graph appear to extend to about:
x=11
The prediction is for:
x=16.4
This is far beyond the observed data range. Even though the model fits the known data very well, predicting too far beyond the data can be unreliable.
The correct statement is that the r^2value indicates a strong fit, but x=16.4is more than 50%of the range beyond the maximum observed value.
Therefore, the correct answer is:
(" A ")

NO.7 As regulations change, the number of licensed sellers of a product decreases. The graph models the change in the number of licensed sellers over time.



What does the horizontal asymptote mean?
A. Over time, the number of licensed sellers will increase back up to 700.
B. The number of licensed sellers was initially 700.
C. In the long run, the number of licensed sellers nears 100.
D. After 11 months, the number of licensed sellers decreased to 100.
Answer: C
Explanation:
The graph shows a decreasing exponential model.
The vertical axis represents:

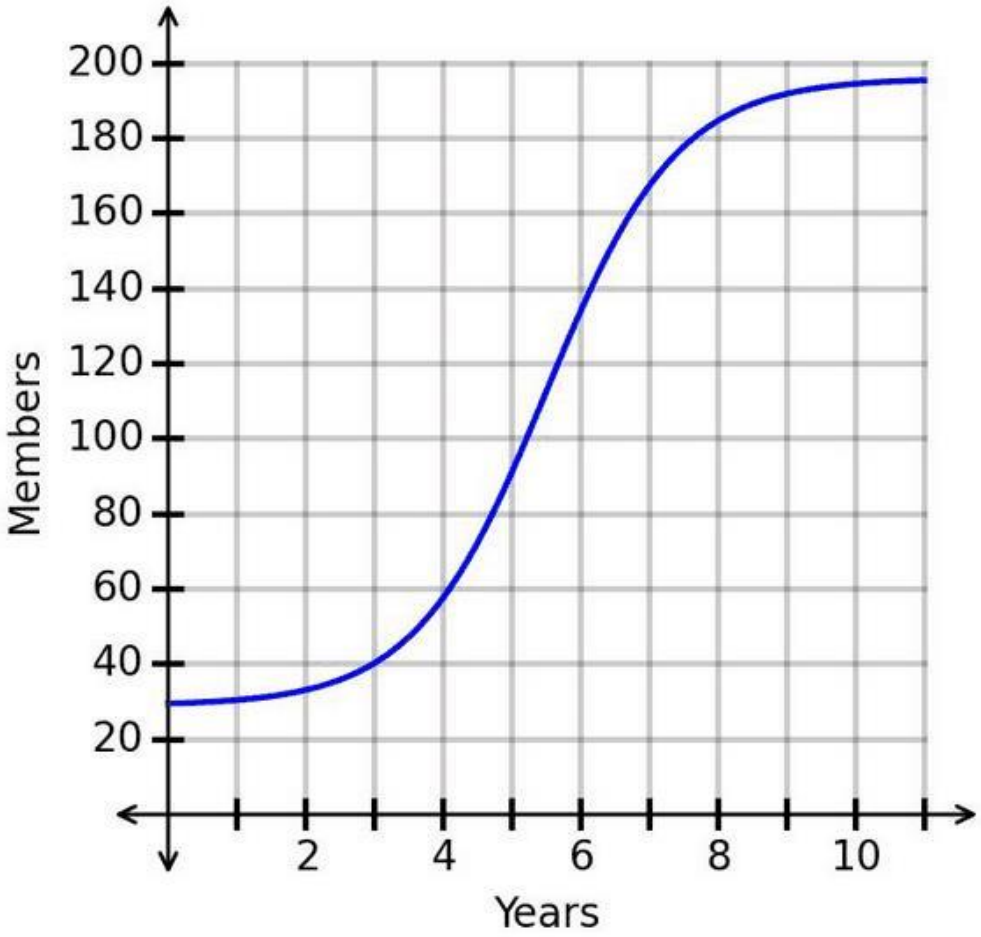
" Licensed sellers "
The horizontal axis represents:
" Time in years "
The graph starts near 700 licensed sellers and decreases over time. However, it does not appear to decrease all the way to 0. Instead, it levels off near:
y=100
That horizontal line is the horizontal asymptote.
A horizontal asymptote represents the long-term value the function approaches as time continues.
So the correct interpretation is:
" In the long run, the number of licensed sellers nears 100. "
Therefore, the correct answer is:
(" C ")

NO.8 Consider the function
w(t)=0.03t^4-0.81t^3+7.55t^2-26.62t+44
which represents the number of workers, w, at a job site thours after 6:00 a.m.
What is the difference between w(4)and w(8)?
A. Approximately 4 hours
B. Approximately 4 workers
C. Approximately 8 hours
D. Approximately 8 workers
Answer: D
Explanation:
The function w(t)gives the number of workers at the job site thours after 6:00 a.m.
We need to find the difference between:
w(4)
and
w(8)
Because w(t)represents workers, the difference will be measured in workers, not hours.
First, evaluate w(4):
w(4)=0.03(4)^4-0.81(4)^3+7.55(4)^2-26.62(4)+44
w(4)=0.03(256)-0.81(64)+7.55(16)-106.48+44
w(4)=7.68-51.84+120.8-106.48+44
w(4)=14.16
Now evaluate w(8):
w(8)=0.03(8)^4-0.81(8)^3+7.55(8)^2-26.62(8)+44
w(8)=0.03(4096)-0.81(512)+7.55(64)-212.96+44
w(8)=122.88-414.72+483.2-212.96+44
w(8)=22.4
Now find the difference:
22.4-14.16=8.24
This is approximately:
8 " workers "

NO.9 A vehicle is traveling away from a town at a fixed rate. After 1 hours, the vehicle is 200 miles from the town.

After 4 hours, the vehicle is 395 miles from the town.
Which function represents the distance, d, between the vehicle and the town after thours?
A. d(t)=65t
B. d(t)=135t
C. d(t)=135t+65
D. d(t)=65t+135
Answer: D
Explanation:
Because the vehicle is traveling away from the town at a fixed rate, the distance can be modeled by a linear function:
d(t)=mt+b
where:
m= " rate of change "
and
b= " initial distance from the town "
We are given two points:
(1#200)
and
(4#395)
These mean:
After 1hour, the vehicle is 200miles away.
After 4hours, the vehicle is 395miles away.
First, find the rate of change:
m=(395-200)/(4-1)
m=195/3
m=65
So the vehicle is moving away from the town at a rate of:
65 " miles per hour "
Now the function has the form:
d(t)=65t+b
Use the point (1#200)to find b:
200=65(1)+b
200=65+b
b=135
Therefore, the function is:
d(t)=65t+135
Check using t=4:
d(4)=65(4)+135
d(4)=260+135
d(4)=395

NO.10 The number of members of a religious organization can be modeled using the logistic function f(x), where xrepresents the number of years since the organization was started and f(x)represents the number of members.
The graph of f(x)is shown.



What is one range of values for which the graph is concave down?

A. (0#8)

B. (0#11)

C. (0#6)

D. (6#11)

Answer: D

Explanation:

The graph is a logistic growth curve.

A logistic growth curve has two main concavity regions:

" concave up before the inflection point "

and

" concave down after the inflection point "

From the graph, the function increases faster and faster until about:

x=6

After x=6, the graph continues increasing, but it begins to flatten out. That means the number of members is increasing slower and slower.

This is concave down behavior.

Therefore, one interval where the graph is concave down is:

(6#11)

So the correct answer is:

(" D ")