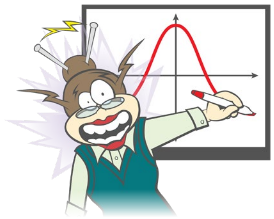
General Mathematics - worksheet



Each of the questions included here can be solved using the TI-Nspire CX CAS.

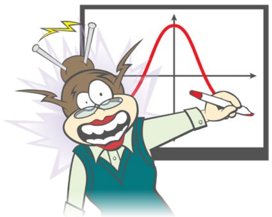
Question 1

The data below shows how salmon weight changes over time (in months) since berth.

time (months)	1	6	10	15	18
Weight (grams)	124	258	395	540	710

a) prepare a scatter plot of the data.
b) Find the linear relationship between the weight (w) and time(t).
c) What is the intercept with the vertical axis and what does it represent?
d) what is the correlation coefficient and what can you conclude from it?
e) Use your equation from (b) to predict the age of a salmon that weighs 1000 grams. Is this answer reliable?

Response:



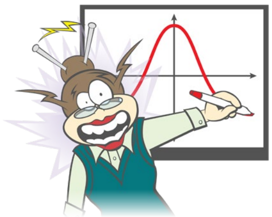
Question 2

Money is invested on the stock market and at the beginning of each year is worth the following amounts-

Year	1	2	3
Value ($)	5000	5600	6272

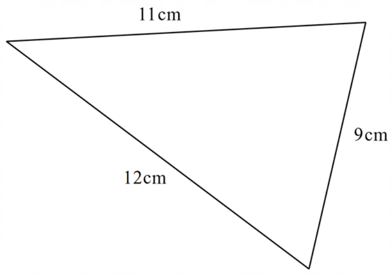
a) what feature of the data indicates the money is increasing exponentially?
b) find the common ratio between the terms
c) what is the sequence rule?
d) what will the value of the investment be at the beginning year 6?
e) during which year will the investment reach $10,000?

Response:



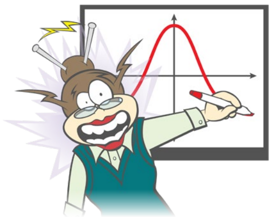
Question 3

Find the area of the triangle shown:



Response:

Question 4



A flight leaves Sydney (34^{o}S, 151^{o}E) at 8:00pm Monday to fly to Dallas (33^{o}N, 97^{o}W) and travels by the shortest route at an average speed of 880km/h.

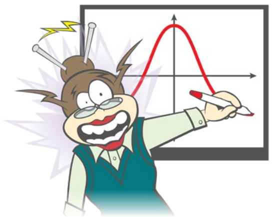
a) Find the distance travelled in kilometres.

b) Find the flight travel time.

c) What are the time zones of Sydney and Dallas relative to UTC?

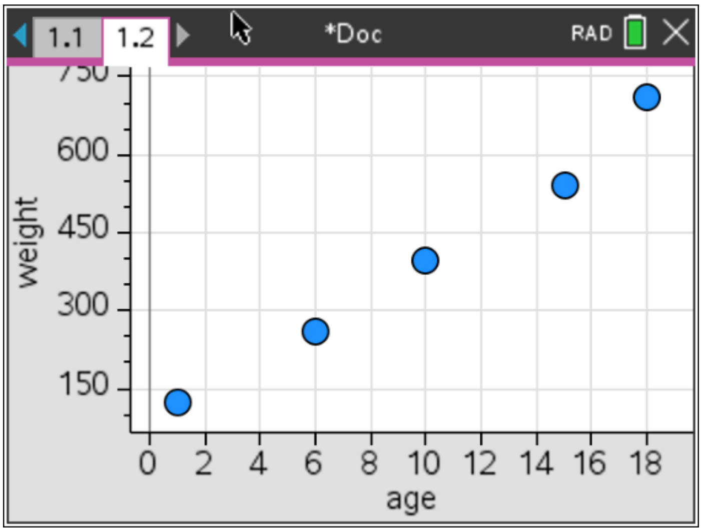
d) Find the local estimated time of arrival of the flight in Dallas.

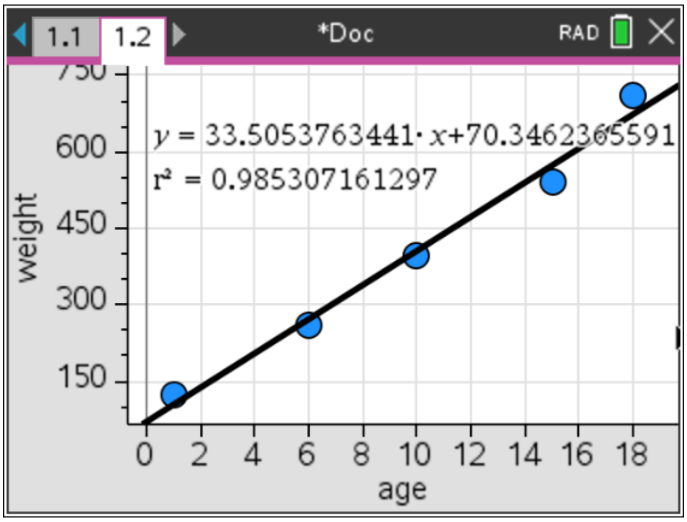
Response:



Solutions

Q1.



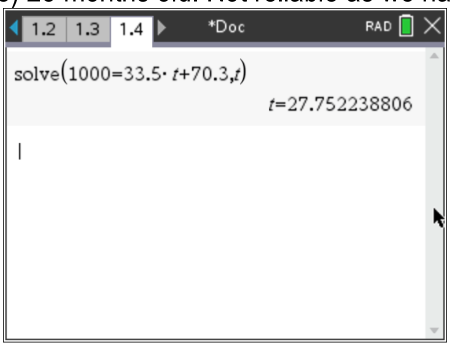


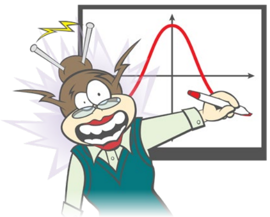
b) the regression equation is w=33.5t+70.3

c) y-axis intercept is 70.3 and represents that when a fish is born it weighs 70.3 grams.

d) $r^2 = 0.98531$ and so $r = \sqrt{0.98531} = 0.993$. There is very strong evidence to suggest that as time increases, weight increases.

e) 28 months old. Not reliable as we have extrapolated.

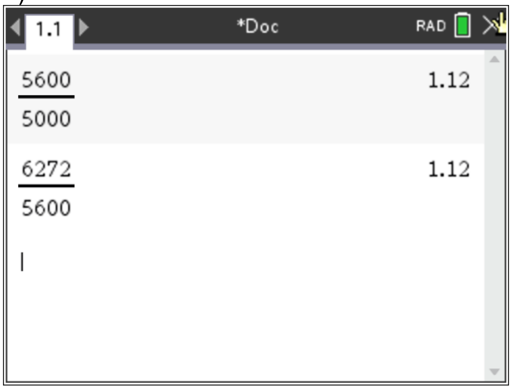




Q2.

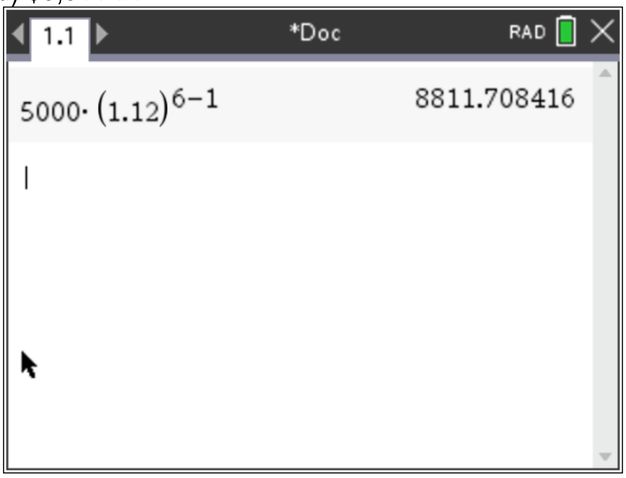
a) the money is increasing by a larger amount each year.

b) r = 1.12

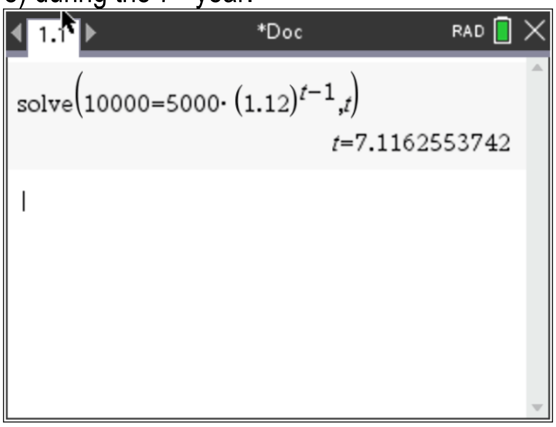


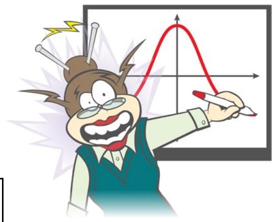
c) $V = 5000 \times (1.12)^{t-1}$

d) $8,811.71

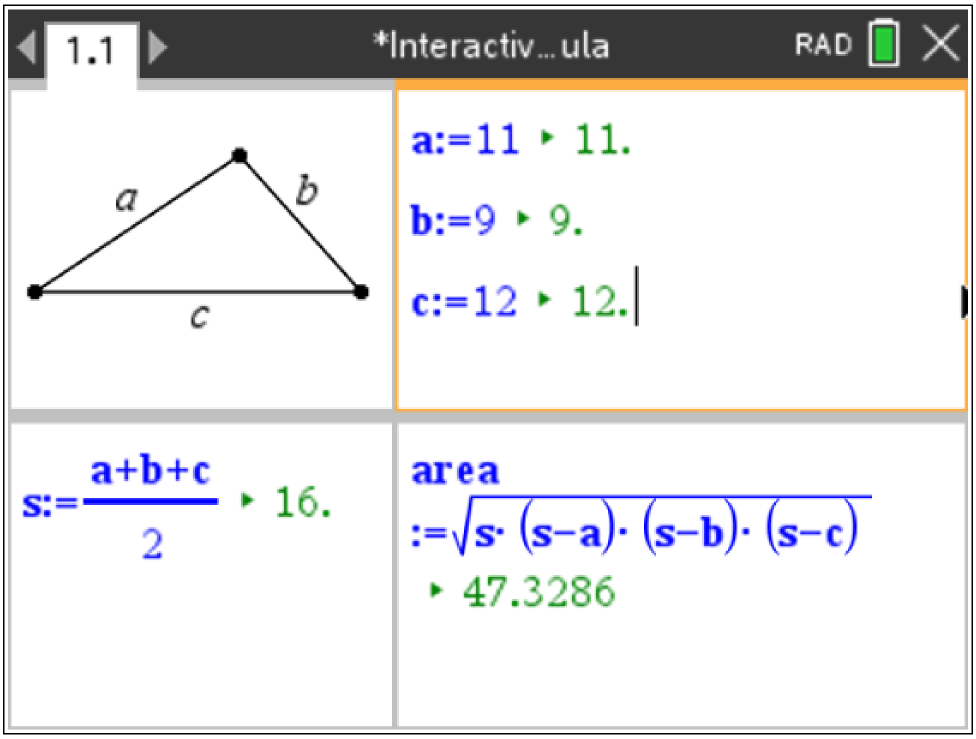


e) during the 7th year.

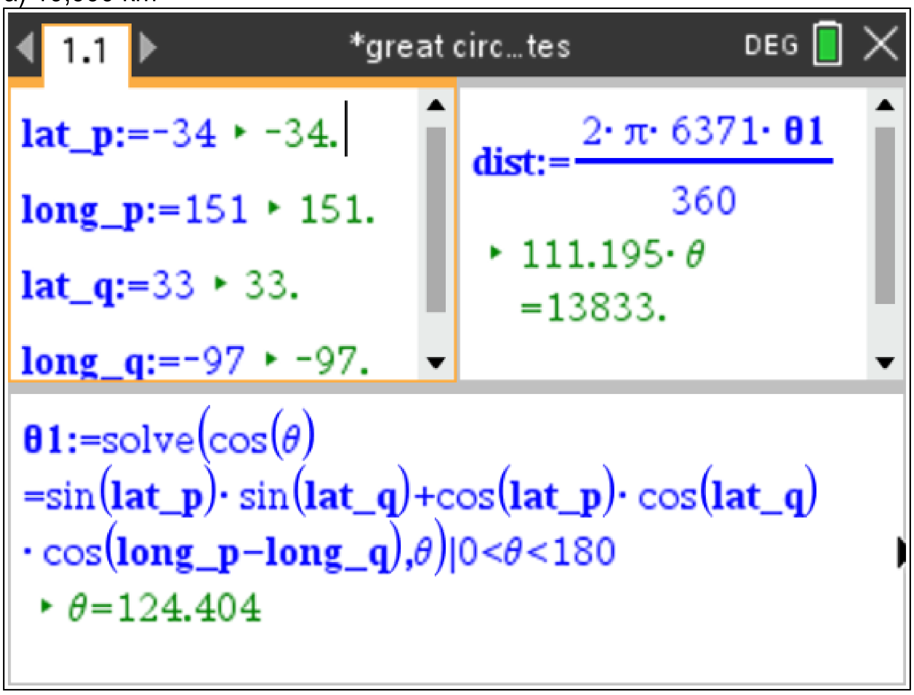


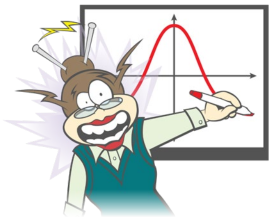


Q3.
Area = 47.3 cm^2.

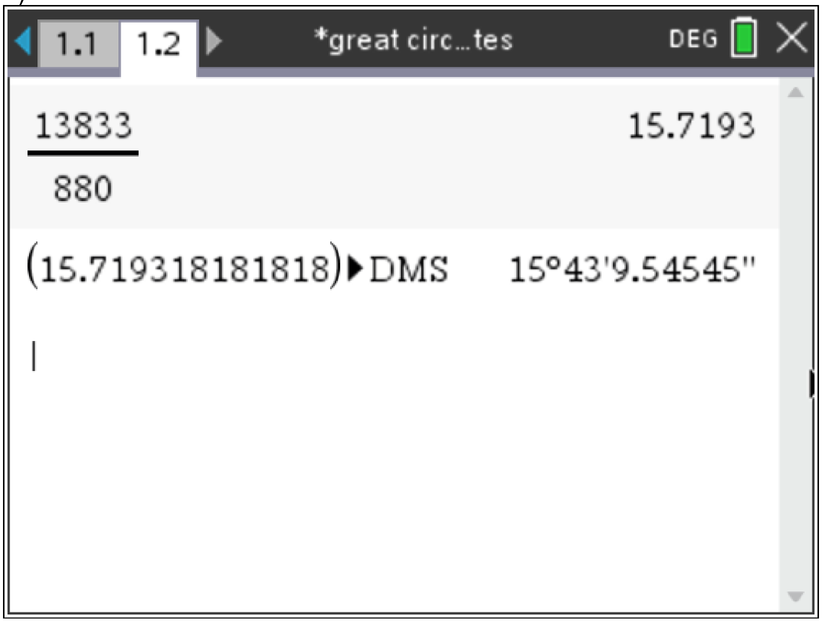


Q4.
a) 13,833 km





b) 15hrs and 43 mins.



c) Sydney is UTC+10hrs
Dallas is UTC-6hrs
(Dallas is 16hrs behind Sydney time)

d) 8pm Monday Sydney time = 4am Monday Dallas time. (subtract 16 hrs)
ETA = 4am Monday + 15hrs 43 mins = 7:43pm Monday Dallas time.