

CAN YOU TELL ME THE WAY TO... SUMMARIZE MY TRAVEL WITH FUNCTIONS?

The stretch of the Camino de Santiago which runs between the towns of Igualada and Panadella is represented on the image attached .

The other day two pilgrims, who have done that stretch, shared with me details of her way, which are attached below:

Información sobre la etapa 2: Igualada - La Panadella

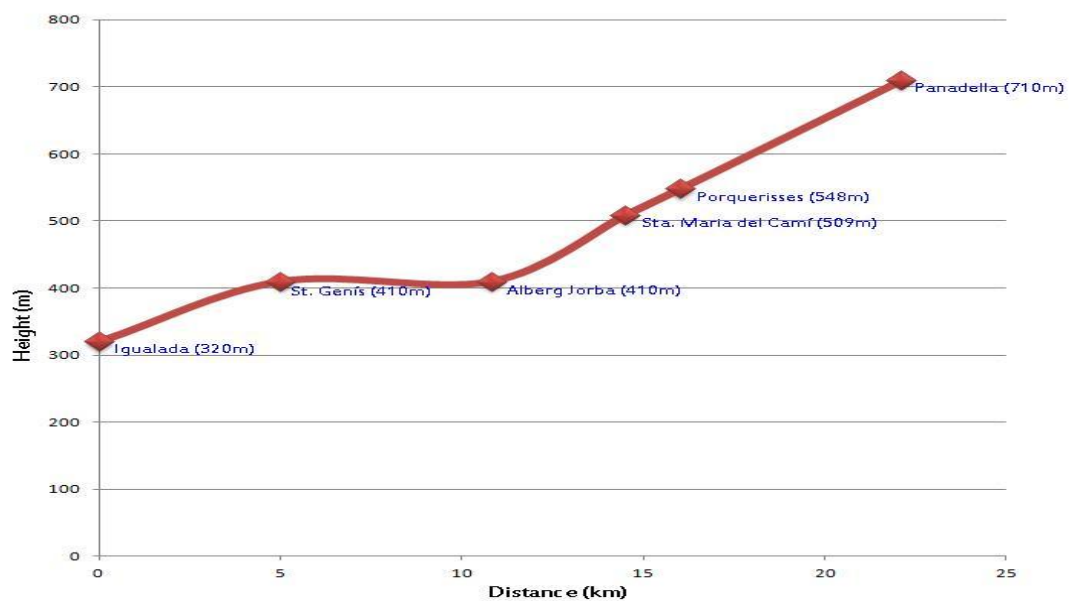


PLACE	DISTANCE (km)	HEIGHT (m)	DURATION (h)
Igualada	0	320	0
St Genís	5	410	1,3
Alberg Jorba (hostel)	10,8	410	2,4
St Maria del Camí	14,5	509	3,5
Porquerisses	16	548	3,9
Panadella	22,1	710	5,6

His concern was to identify one or several functions on its own path, because they want to summarize all the data that they had been achieved. Do you think we can help? Come on!

1. Represents graphically the height according to the distance

"Camí de Sant Jaume". Stage: "Igualada"- "La Panadella" (Distance-Height)

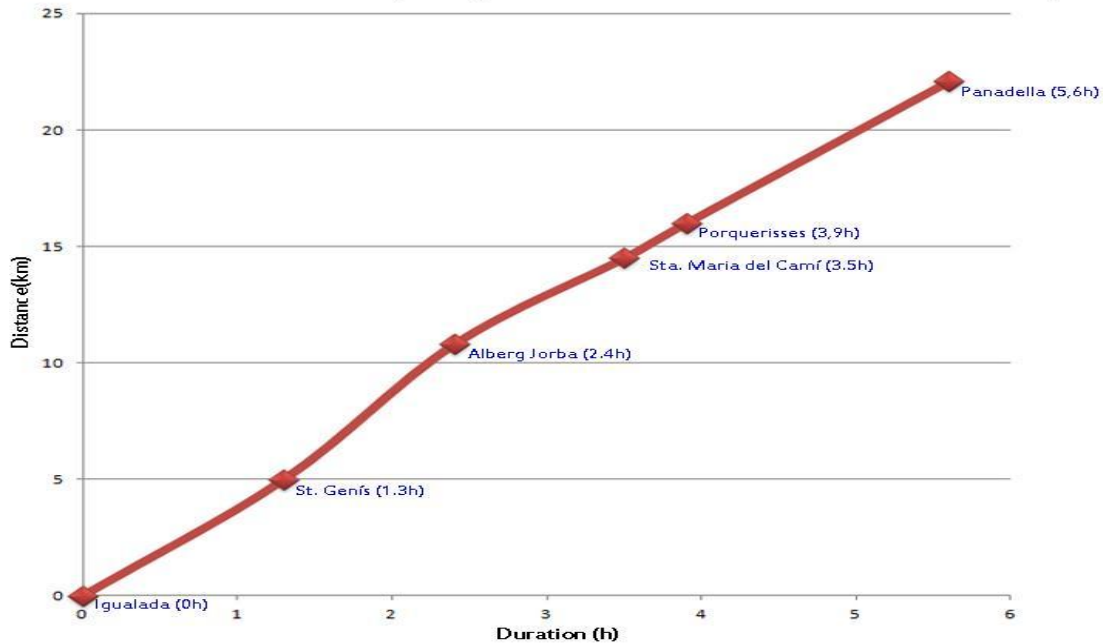


The "Distance" is the Independent variable and "Height" is the Dependent variable.

If we study the representation, we can see that this function has two changes of tendency: "St Genís" (5 , 410) and "Alberg de Jorba" (10.8 , 410).

2. Represents graphically the distance according to the duration:

"Camí de Sant Jaume". Stage: "Igalada"- "La Panadella" (Distance-Height)



This representation helps us to see how much time they spend in every stage part.

3. Fill the table:

DISTANCE (km)	Where am I?	How many hours have I been walking?	How do you know this?	Height where I am (m)	Function equation
1	Igalada-St Genís	0,5	Graphically	338	$y=18x + 320$
4	Igalada-St Genís	1	Graphically	392	$y=18x + 320$
6	St Genís-A. Jorba	1,4	Graphically	410	$y=410$
10	St Genís-A. Jorba	2,25	Graphically	410	$y=410$
14,5	A. Jorba-Sta. M. Camí	3,5	Graphically	509	$y=26,5x + 124,35$
18	Porquerisses-Panadella	4,5	Graphically	601	$y=26,5x + 124,35$
21	Porquerisses-Panadella	5,25	Graphically	681	$y=26,5x + 124,35$

- How do you find this information?

Equation for the first stage: Affine function

$$\text{Slope (m): } 18 \rightarrow \frac{y_2 - y_1}{x_2 - x_1} = \frac{392 - 338}{4 - 1} = \frac{54}{3} = 18$$

y-intercept (n): 320 -> When distance=0, height=320

Equation for the second stage: Constant function

Slope (m): It's a Constant function! It doesn't have slope.

y-intercept (n): 410 -> Always stay in the same height

Equation for the third stage: Affine function

$$\text{Slope (m): } 26,5 \rightarrow \frac{y_2 - y_1}{x_2 - x_1} = \frac{681 - 509}{21 - 14,5} = 26,5$$

$$\text{y-intercept (n): } 124,35 \rightarrow y = 26,5x + n$$

$$681 = 26,5 \cdot 21 + n$$

$$n = 681 - 556,5 = 124,35$$

4. If you want... Fill this table:

WALKING STAGE PARTS	DISTANCE (km)	ELEVATION (m)	DURATION (h)	SPEED (km/h)	MEAN SPEED RATE (min/km)
Igualada - St Genís	5	90	1,3	4	15
St Genís - Alberg Jorba	5,8	0	1,2	5	12
A. Jorba - St Maria del Camí	3,7	99	1,1	3,5	17,14
St M. Camí - Porquerisses	1,5	40	0,4	3,5	17,14
Porquerisses - Panadella	6,1	162	1,7	3,5	17,14

5. If you want... Find the equation which explains all the stage. You can do it graphically:

