

1. Sean

$$V = \{f : [a, b] \rightarrow R\} \quad W = \{f : [a, b] \rightarrow R \mid f(a) = f(b)\}$$

¿Es W un subespacio de V ?

2. a. Construya un ejemplo para ilustrar el siguiente resultado:

Cualquier conjunto de cinco puntos en el plano están en una sección cónica, esto es, todos cumplen alguna ecuación de la forma

$$ax^2 + by^2 + cxy + dx + ey + f = 0$$

donde algunos de los coeficientes a, \dots, f no son cero.

b. ¿Qué condiciones deben cumplir las constantes a, b, c para que el sistema tenga solución? ¿Cual es la solución?

$$3x_1 - 2x_2 + 5x_3 = a$$

$$2x_1 + x_2 + 3x_3 = b$$

$$x_1 + 4x_3 + x_3 = c$$

3. When the space shuttle Challenger exploded in 1986, one of the criticisms made of NASA's decision to launch was in the way they did the analysis of number of O-ring failures versus temperature (O-ring failure caused the explosion). Four O-ring failures would be fatal. NASA had data from 24 previous flights.

The temperature that day was forecast to be 31°F.

(a) NASA based the decision to launch partially on a chart showing only the flights that had at least one O-ring failure. Find the line that best fits these seven flights. On the basis of this data, predict the number of O-ring failures when the temperature is 31, and when the number of failures will exceed four.

(b) Find the line that best fits all 24 flights. On the basis of this extra data, predict the number of O-ring failures when the temperature is 31, and when the number of failures will exceed four.

Which do you think is the more accurate method of predicting?

<i>temp °F</i>	53	75	57	58	63	70	70	66	67	67	67		
<i>failures</i>	3	2	1	1	1	1	1	0	0	0	0		
	68	69	70	70	72	73	75	76	76	78	79	80	81
	0	0	0	0	0	0	0	0	0	0	0	0	0

Figura 1 Nasa dates.