



MANUAL DE USUARIO

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INTRODUCCIÓN

En esta unidad del libro dinámico se exploran conceptos básicos de funciones, como es el caso de definiciones, formas de representación, dominio, rango, función lineal y función cuadrática. Se usan situaciones prácticas para ejemplificar los anteriores conceptos, también se cuenta con situaciones problema y ejercicios complementarios para reforzar los temas tratados en la unidad.

INSTALACIÓN

INSTRUCCIONES DE INSTALACIÓN

Los programas con extensión *.cdf* no requieren instalación. Sin embargo, es necesario que previamente se instale en el computador un complemento que permite la ejecución de este tipo de extensiones (*.cdf*), este complemento se llama “*Wolfram CDF Player*” y su descarga e instalación es gratuita.

INSTALACIÓN DE “WOLFRAM CDF PLAYER”

Para poder ejecutar los programas en su computador es necesario que tenga instalado “*Wolfram CDF Player*”. Para instalarlo siga los siguientes pasos:



1. Ingrese a la página <http://www.wolfram.com/cdf-player/>
2. Complete los datos pedidos y escoja su sistema operativo (Windows / Mac / Linux)
3. De clic en el enlace para comenzar la descarga

Download Wolfram Player

 **Windows 10/8/7**
[Other platform?](#)

Which of the following best describes you?
Choose one ... ▼

Email address (required):

Version:
Latest version 12.0.0 ▼

By downloading and installing this application, you agree to the
[Wolfram Player license agreement.](#)

Start Download

4. Al terminar la descarga ejecute el archivo y se abrirá una ventana que lo guiará en el proceso de instalación.



Solo se debe instalar una vez el *CDF Player*, de aquí en adelante cualquier programa *.cdf ejecutará este complemento para iniciarse.

EJECUCIÓN DEL PROGRAMA

Una vez instalado el *CDF Player* debe hacer doble clic en el programa para abrirlo. Esta acción ejecuta automáticamente el complemento

USO DEL PROGRAMA

Al tener instalado el *CDF Player* como se describe con anterioridad, y al ejecutar el archivo **400.vf.cdf**, es posible visualizar su contenido como se ilustra en la siguiente imagen:



File Edit Window Help
WOLFRAM CDF Player 100% Published under FreeCell™ terms

Unidad 4

Funciones

- ▶ 1. Generalidades de funciones
- ▶ 2. Función lineal
- ▶ 3. Función cuadrática
- ▶ Conclusiones del capítulo

Aquí se observa que hay cuatro secciones principales a desarrollar: generalidades, funciones lineales, funciones cuadráticas y conclusiones del capítulo; para acceder a cada una, se debe dar clic sobre el símbolo que aparece justo antes de la numeración. A continuación, se muestra lo que aparece al expandir la primera sección:



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Unidad 4

Funciones

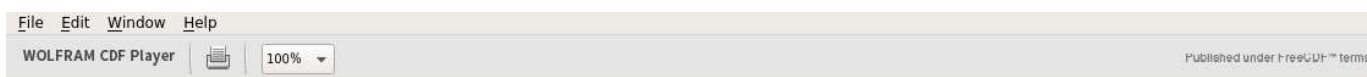
1. Generalidades de funciones

En esta unidad se comenzará con el recorrido de funciones y sus propiedades. Como se verá en el futuro, las funciones son un mecanismo matemático muy general que sirve para representar muchas situaciones de la vida real como es el caso de resultados de la física (espacio recorrido en términos de la velocidad y tiempo transcurrido), medicina (cantidad de medicamento a aplicar como una respuesta a la gravedad de los síntomas), economía (precio de un artículo en función de su demanda), transporte (cantidad de buses en la malla vial dependiendo de la hora del día), etc., por solamente mencionar algunos ejemplos. Las funciones se encuentran en prácticamente todos los campos de acción del emprendimiento humano y serán de gran utilidad en el quehacer de cualquier profesional.

¿Qué es una función?

Allí se observa una introducción de la temática a desarrollar en la sección y posterior a esto, el lector podrá desplegar nuevos contenidos para explorar a su ritmo.

En las siguientes imágenes se observan algunas situaciones correspondientes a la definición básica de funciones, sus representaciones y tipos, específicamente lineales y cuadráticas. Para el concepto básico de función, se tiene una situación en un parque de atracciones. Para representaciones alternativas, se introducen las gráficas de funciones mediante una situación que involucra un medicamento, y finalmente, para funciones lineales y cuadráticas, se acude a una situación en una granja.



▼ Situación: Una tarde de ocio



En un parque de diversiones, el primer domingo del mes la entrada es gratis y las atracciones "Aviones", "Carrusel", "Mini rueda", "Paseo a caballo", "Play ground", "Sillas voladoras", "Soft play", "Tacitas de té", "Tobogán", "Tortugas" y "Vía panamericana" tienen un costo de \$ 3300 pesos.

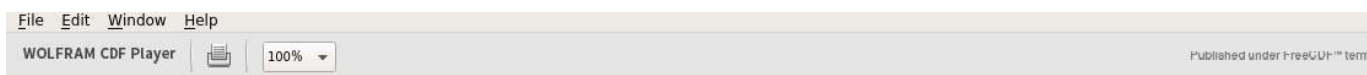
Alicia desea ir al parque con sus amigos a pasar la tarde y para ello debe planear cuánto dinero debe llevar y en qué desea gastarlo. Suponga que el transporte de ida y regreso al parque vale \$ 10000 pesos.

Suponga que Alicia piensa entrar a solo dos atracciones ella sabe que la cantidad de dinero a gastar se puede encontrar mediante la expresión:

$$10000 + 3300 (2) = 16600$$

por otro lado, si Alicia piensa entrar a cuatro atracciones, la cantidad de dinero a gastar esta dada por la expresión:

$$10000 + 3300 (4) = 23200$$



▼ Situación: Toma de un medicamento

Una compañía farmacéutica está investigando un nuevo medicamento, inyectable: para evaluar la efectividad se debe inyectar la droga en pacientes de prueba, y tomar muestras de sangre cada cierto tiempo para poder medir la concentración en el torrente sanguíneo (mg/cm^3).

El siguiente **interactivo** muestra la concentración del medicamento en la sangre de un paciente cada 10 minutos en el lapso de dos horas.





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▼ **Situación: producción de manzanas (parte 1)**

Roberto es un granjero y dispone de un terreno en el cual puede sembrar hasta 81 árboles de manzanas. Él sabe que como los árboles necesitan nutrientes para crecer y dar frutos, entre más árboles se siembre, menos será la cantidad de nutrientes para cada árbol y esto hará que sea menos la producción de cada árbol; se conoce que:

- Si siembra entre uno y cincuenta árboles, la producción de cada árbol será de 600 manzanas promedio al año.
- Por cada árbol adicional que siembre (después de cincuenta), la producción de cada árbol disminuye en 10 manzanas en promedio al año.

Ejemplo: si siembra 32 árboles la producción de cada árbol será de 600 manzanas anuales, pero si siembra 51 árboles la producción de cada árbol será de 590 manzanas anuales.

La siguiente animación muestra algunas de las maneras de colocar los árboles

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