**Exploring Operations with Functions - 1.7**

**Example 1:**

1. Determine
2. Determine

**Example 2:** Use the graphs ofand to graph

 

**EXPLORING what this means in a real life situation**

A popular coffee house sells iced cappuccino for $4 and hot cappuccino for $3. The manager would like to predict the relationship between the outside temperature and the total daily revenue from each type of cappuccino sold. The manager discovers that every 1 degree Celsius increase in temperature leads to an increase in the sales of cold drinks by three cups per day and to a decrease in sales of hot drinks by five cups per day.

The function f(x) =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

can be used to model the number

of iced caps sold.

The function g(x) = -5x +200

can be used to model the number

of hot caps sold.

In both functions, x represents the daily average outside \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In the first function, f(x) represents the daily average number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ sold. In the second function, g(x) represents the daily average number of \_\_\_\_\_\_\_\_\_\_\_\_sold.

a) Make a table of values for each function, with the temperature in intervals of 5 degrees. Then sketch f(x) and g(x) below.

|  |  |  |
| --- | --- | --- |
| X | f(x) | g(x) |
| 0 |  |  |
| 5 |  |  |
| 10 |  |  |
| 15 |  |  |
| 20 |  |  |
| 25 |  |  |
| 30 |  |  |
| 35 |  |  |
| 40 |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

b) What does h(x) = f(x) + g(x) represent?

c) Simplify h(x)

d) Make a table of values for the function, h(x). How do the values compare with the values in the table from A? How do the domains of f(x), g(x) and h(x) compare?

|  |  |
| --- | --- |
| x | h(x) |
| 0 |  |
| 5 |  |
| 10 |  |
| 15 |  |
| 20 |  |
| 25 |  |
| 30 |  |
| 35 |  |
| 40 |  |

e) What does R(x) = 4f(x) + 3g(x) represent?

f) Simplify R(x).

g) Make a table of values for the function, R(x). How do the values compare with the values in the tables from A? How do the domains of f(x), g(x) and R(x) compare?

|  |  |
| --- | --- |
| x | R(x) |
| 0 |  |
| 5 |  |
| 10 |  |
| 15 |  |
| 20 |  |
| 25 |  |
| 30 |  |
| 35 |  |
| 40 |  |

h) How does temperature affect the daily revenue from a cappuccinos sold?

HOMEWORK: pg 56-58: 1b,c; 2a; 3b; 4,5,6,7,8