13. Clocks and Calendars and Functions

1. Find the measures in degrees of the smaller angle formed by the hour hand and the minute hand of a clock at these timings:

a) 11:20 p.m. b) 20 mins past 2 c) 10 mins to 6 a.m.

d) Quarter to 11 e) 30 mins past mid noon

Answer:

* 11:20 p.m. -
* 20 mins past 2 - 2:20 -
* 10 mins to 6 a.m. - 5:50 -
* Quarter to 11 - 10:45 -
* 30 mins past mid noon - 12:30 -

1. The minute hand is twice as long as the hour hand. What is the ratio of the distance travelled by the minute hand in hours and the distance by the hour hand in hours?

Answer:

* Distance traveled by min hand
* Distance traveled by hour hand
* Ratio:

1. What is the difference in the degree measures of the angles formed by the hour hand and the minute hand of a clock at and ?

Answer:

* In minute, the Minute Hand will move degrees (clockwise)
* In minute, the Hour Hand will move degree (clockwise)
* So, angle will change by

1. Refer the QR Book page 117.

Answer:

* Draw to understand
* Solution:

1. How many pairs of days are feasible for the two extra days of the leap year?

Answer:

* We have a total of possibilities for the 1st extra day (i.e. Sunday, Monday …)
* The week day on the 2nd extra day will be decided by the week day on the 1st extra day
* Solution:

# Functions

1. Let the function g be defines by . If , what is the value of ?

Answer:

1. The table shows selected values of function . If , where c and r are constants. What is ?

Answer:

* For
* For

1. According to the table, for what value of does

Answer:

* Assume

1. Let be defined for any positive integer greater than as the sum of all the prime numbers less than . For example, and . What is the value of ?

Answer:

1. What is the domain of ?

Answer:

* We don’t have any problem with the numerator, the function is well defined for all real values of numerator
* The problem arises in the denominator
  + Denominator must not be
  + must not be negative (because of the square root)
* Combining both the conditions above we get