1. Evaluate  Give your answer as a fraction in lowest terms.
2. Let  and  be two positive integers. One is a three-digit number; the other is a two-digit number. If and is the product of the digits of , find the sum of all five digits.
3. William has the option of taking two buses to his college campus. Bus A arrives at William’s stop every 6 minutes starting at 8:06 am. Bus B arrives at William’s stop every 8 minutes starting at 8:05 am. If William shows up at the bus stop at a random time between 8:00 am and 10:00 am, what is the probability that the first bus that comes by is Bus A? Give your answer as a reduced fraction.
4. The area of a regular 12-sided polygon is 90 square cm. Find the length of a diagonal of the polygon. Give your answer to the nearest hundredth of a cm.
5. Find the value of  that makes  as small as possible.
6. What is the remainder when x3 – 64x is divided by x2 – 8x?
7. An English class requires 4 papers. The grade on each paper counts twice as much as toward the final average as did the previous paper, in order to reward students for progress in their writing skills. The grades for Jill’s first 3 papers out of 100 were, in order, 60, 50, and 60. What is the minimum grade she can make on the fourth paper in order to have an 80 average?
8. Matthew knows that one of five books he was reading contains his lost concert ticket. He decides to look for it. What is the expected (average) number of books he will need to search before he knows which book holds the ticket?
9. Two equal-sized clocks are placed side-by-side three inches apart. The time showing on the clock on the left is 11:05. The time showing on the clock on the right is 5:55. If the tips of the minute hands (which reach the edges of the clocks) are 5 inches apart, what is the radius of the clocks?
10. Find the sum of the digits of the integer equal to

Answers:

1. −199/200
2. 21
3. 5/8
4. 10.95 cm
5. 2.5
6. 0
7. 100
8. 3
9. 2 inches
10. 50