The sum of the first 90 positive even integers minus the sum of the first 90 positive odd integers is equal to?
Find $x$, if \[ \frac{25}{1 + \frac{3}{3 + \frac{x}{4}}} = 13. \]
Two circles of radius 1 are tangent to each other and to a line as shown.

What is the radius of the largest circle that will fit in the shaded area?
The manager of an 80-unit apartment complex knows from experience that at a rate of $300 all the units will be full. On average, one additional unit will remain vacant for each $20 increase in rent over $300. Furthermore, the manager must keep at least 30 units rented due to other financial considerations. Currently, the revenue from the complex is $35,000. How many apartments are rented?
If all possible permutations of the letters in the word MATH are listed in alphabetical order, where does the word MATH appear on the list?
A non-square rectangle is inscribed in a 3 inch by 3 inch square so that each vertex of the rectangle is at a one-third point on a different side of the square. Find the area of the rectangle.
Let $C$ be the portion of the graph of $y = 1 - x^2$ with $0 \leq x \leq 1$, and let $C'$ be the reflection of $C$ around the line $y = x$. How many points are there in the intersection of $C$ and $C'$?
Solve the equation (give all answers):

\[ \log_{64} x - \log_x 64 = \frac{5}{6} \]
Find the area of the shaded region in the parallelogram ABCD. Assume that BE = EF = FC, DG = CG, AB = 12, and CH = 6.
Find one set of distinct values of the integers $a$, $b$, $c$, and $d$ where $a > b > c > d > 0$ such that $a^3 + d^3 = b^3 + c^3 = 1729$. 