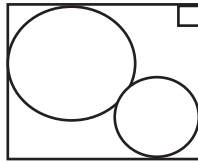


Practice Fermat Number 1

- The average of 5 distinct positive integers is 20. What is the largest possible integer in this set?
a) 100 b) 20 c) 90 d) 33 e) 40
- Calculate the area of the pentagon $ABCDE$, formed by the points $A(0,0)$, $B(0,12)$, $C(4,15)$, $D(8,12)$, and $E(8,0)$.
a) 120 b) 108 c) 104 d) 100 e) 96
- If Ian writes 13 consecutive integers starting with 137 and Peter then writes the next 13, by how much does the sum of Peter's integers exceed the sum of Ian's integers?
a) 13 b) 156 c) 169 d) 182 e) 196
- If $0 < x < 1$ which of the following expressions has the smallest value?
a) $\frac{1}{x}$ b) $\frac{x+1}{x}$ c) x d) x^2 e) x^3
- If $a + b = 14$, $b + c = 13$ and $a + c = 9$, then the product abc equals
a) 144 b) 160 c) 180 d) 225 e) 360
- As shown in the diagram, two circles are drawn inside a 40 by 45 rectangle. Each of the circles touches 2 adjacent sides of the rectangle and the other circle. If one of the circles has radius 16, what is the radius of the second circle?



- a) 7 b) 8 c) 9 d) 10 e) 11
- If $x^2 + 5x + 6$ is a factor of $x^4 + ax^2 + b$ then $a + b$ equals:
a) 11 b) 23 c) 39 d) 61 e) 73
- If x is a solution of the equation $x^2 = 8x + 13$, then $x^3 = ax + b$ where a and b are integers. The sum of a and b equals
a) 21 b) 34 c) 91 d) 181 e) 205
- The volume of a right circular cone is given by $V = \frac{1}{3}\pi r^2 h$ where h is the height and r is the radius of the base. The top is removed by slicing the cone with a plane parallel to its base at a distance $\frac{1}{2}h$ from it. The volume of the remaining piece is given by
a) $\frac{1}{6}\pi r^2 h$ b) $\frac{1}{4}\pi r^2 h$ c) $\frac{7}{24}\pi r^2 h$ d) $\frac{1}{3}\pi r^2 h$ e) $\frac{3}{8}\pi r^2 h$
- How many positive integers less than 100 have exactly 4 factors (including the number itself and 1 as factors)?
a) 2 b) 14 c) 16 d) 30 e) 32