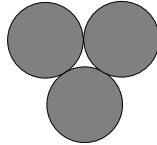


Question 1. What is $\frac{11 + 7i}{2 - i} + i^{213}$ when expressed in the form of $a + bi$?

Answer: $3 + 6i$

Question 2. The following circles are pairwise tangent and each of the circles has radius 2. Find the area of the unshaded region that is enclosed by the circles.



Answer: $4\sqrt{3} - 2\pi$

Question 3. You flip a coin and roll a die. What is the probability of getting a head on the coin and a prime number on the die?

Answer: $\frac{1}{4}$ or 0.25 or 25%

Question 4. Two straight lines perpendicular to each other have the same y -intercept 4. If one of these lines passes through the point $(1, 2)$, what is the equation of the other line expressed in the form of $y = mx + b$?

Answer: $y = \frac{1}{2}x + 4$ or $y = 0.5x + 4$

Question 5. A triangle with sides of lengths 9, 12 and 15 is similar to another triangle with sides of lengths a , b and 12, where $a < b < 12$. What is a ?

Answer: $\frac{36}{5}$ or $7\frac{1}{5}$ or 7.2

Question 6. What is $\left[3^{-1} + (2 + 2^{-1})^{-1}\right]^{-1} + 16^{0.25}$ when expressed as an improper fraction in lowest terms?

Answer: $\frac{37}{11}$

Question 7. Find all values of θ , $0^\circ \leq \theta \leq 360^\circ$, that satisfy the equation $\sin^2 \theta + 2 = -2 \cos \theta$

Answer: 180° or 180

Question 8. When the first 135 primes greater than 2 are multiplied together, what is the units digit of the product?

Answer: 5

Question 9. If $f(x) = x^2$ and $g(x) = x + 2$, for what value of x will $(f \circ g)(x) = (g \circ f)(x)$?

Answer: $-\frac{1}{2}$ or -0.5

Question 10. A circular dinner plate has a 10" diameter and this includes a 1"- wide border painted gold. The center portion is painted white. What percentage of the entire plate surface is painted gold?

Answer: 36% or 36

Question 11. Two students independently select an integer between 0 and 9 inclusive. They then multiply these two integers to form a product. What is the probability that this product is greater than 50?

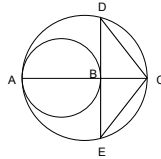
Answer: $\frac{1}{10}$ or 0.10 or 10%

Question 12. In the Euclidean plane, Point A is on a circle centered at the point O, and point O is on the circle centered at the point A. The circles intersect at the points B and C. What is the measurement of the angle BAC in degrees?

Answer: 120° or 120

Question 13. In the following diagram, AC is a diameter of the outer circle which is 3 units, AB is a diameter of the inner circle which is 2 units, and DE intersects AC at the point B perpendicularly. Find the area of the triangle CDE .

Answer: $\sqrt{2}$

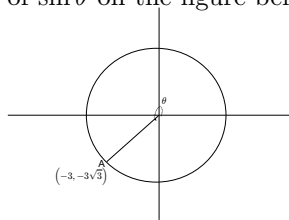


Question 14. If $f(x) = f(x + 1) + x$ and $f(0) = 4$, what is the value of $f(4)$?

Answer: -2

Question 15. Find the exact value of $\sin \theta$ on the figure below, where the point A has the coordinates $(-3, -3\sqrt{3})$

Answer: $-\frac{\sqrt{3}}{2}$



Question 16. Find a six-digit number beginning and ending with the digit 2 that is a product of three consecutive even numbers.

Answer: 287232