

Question 1. If $x + y = 3$, $y + z = 5$, and $x + z = 7$, what is $x + y + z$? Answer: 4

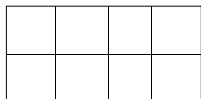
Question 2. What does $\left(\frac{1}{16}\right)^{\sin \frac{7\pi}{2}} + \left(\frac{1}{3}\right)^{\cos \frac{5\pi}{2}} - \left(\frac{\sin \left(\frac{4\pi}{3}\right)}{\cos \left(\frac{2\pi}{3}\right)}\right)^2$ equal? Answer: $\frac{15}{2}$

Question 3. What does $\cos \left(\frac{\pi}{8}\right)$ equal? Answer: $\sqrt{\frac{2 + \sqrt{2}}{4}}$

Question 4. A parabola that is an even function passes through the points (1,5) and $(\sqrt{3}, -1)$. Find the equation of the parabola. Answer: $y = -3x^2 + 8$

Question 5. How many rectangles are in the given figure?

Answer: 30



Question 6. What is the y -intercept of the line passing through the center of the circle $x^2 + y^2 + 2x - 6y = \sqrt{\frac{\pi}{2}}$ whose slope is 4? Answer: 7

Question 7. 64 is divided into three parts with the proportion 2:4:6. What is the value of the largest part? Answer: 32

Question 8. Solve the equation: $2^x + 2^x + 2^x + 2^x + 2^x + 2^x + 2^x + 2^x = (\sqrt{2})^{12}$.

Answer: 3

Question 9. What number when tripled and then squared equals one less than 6 times the number? Answer: $\frac{3}{2}$

Question 10. If $\tan(t) = \frac{2}{3}$, $\pi \leq t \leq \frac{3\pi}{2}$, what is $\cos(t) \csc(t)$? Answer: $\frac{1}{3}$

Question 11. What is the length of the semi-minor axis of the ellipse with center (0,0) and focus (0,3) and vertex (0, 5)? Answer: 4

Question 12. Consider two positive numbers such that their difference is 2 and their product is 48. What is the smaller number? Answer: 6

Question 13. Simplify $\frac{1 + 2 + 3 + \dots + 9}{2 + 4 + 6 + \dots + 10} - 2$ to lowest terms. Answer: $-\frac{1}{2}$

Question 14. There are three values where the function $f(x) = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}$ is undefined.

One of them is -1. What are the other two values? Answer: $-\frac{1}{2}$ and 0

Question 15. The sum of the first n -terms of a sequence is $n^2 + 7n$. Find the 1013th term of the sequence. Answer: 2032

Question 16. Find the point of intersection of the lines $x + 2y = 3$ and $2x - y = 3$. Answer: $\left(\frac{9}{5}, \frac{3}{5}\right)$