

Mock NBT MAT Paper 1

Practice 20 NBT-type multiple-choice questions compiled by Euler Education below.

1. What is the remainder when $3x^3 - 5x^2 - 7x + 20$ is divided by $x^2 - 2x - 3$?

A) $4x + 23$

B) $2x + 3$

C) $3x - 2$

D) $23x + 1$

2. What is the value of $\sin^2(x) + \cos^2(x)$ equal to?

A) 0

B) 1

C) $\frac{1}{2}$

D) -1

3. What is $a^n - a^{(n-1)}$ equal to?

A) a^{n+1}

B) a^{n-1}

C) a^{2n}

D) $a^{(n-1)}(a - 1)$

4. If the sum of the first n terms of an arithmetic series is $n(3n + 5)$, what is the tenth term of the series?

A) $3n + 5$

B) 30

C) $30n$

D) 62

5. Simplify $((ab)^{-1})((a^{-1} + b^{-1})^{-1})$.

A) $\frac{1}{a+b}$

B) $\frac{1}{ab}$

C) $\frac{b}{a}$

D) $\frac{a}{b}$

6. What is $\cos(75) \cdot \sin(60) + \cos(15) \cdot \sin(30)$ equal to?

A) 1

B) 3

C) $\sqrt{2}$

D) $\frac{\sqrt{2}}{2}$

7. Evaluate $3^4 + 5 \times 2 - 7$.

A) 106

B) 84

C) 33

D) 91

8. An isosceles triangle has an area of 15 cm^2 and a base of 6 cm. If the height is 6 cm, what is the perimeter of the triangle?

A) $6 + 6\sqrt{5}$

B) $5\sqrt{5}$

C) $6 + 5\sqrt{3}$

D) $6 + 3\sqrt{5}$

9. If $g(x)$ is a quadratic function such that $g(1) = 3$, $g(2) = 9$, and $g(0) = -1$, determine $g(4)$:

A) 36

B) 27

C) 32

D) 24

10. Iman and Emily each throw coins. What is the probability that Emily more heads than Iman?

A) $\frac{1}{6}$

B) $\frac{5}{12}$

C) $\frac{1}{3}$

D) $\frac{1}{4}$

11. Consider the triangle with vertices $A(2 ; 4)$, $B(6 ; 1)$, and $C(3 ; 1)$. What is the area of triangle ABC?

A) 7 units²

B) 4.5 units²

C) 9 units²

D) 10 units²

12. If the area of a circle is doubled, what is the difference in length between the old and the new circumference in terms of the old radius?

A) $2\sqrt{2}\pi r_{\text{old}}(\sqrt{2} - 1)$

B) $\pi r_{\text{old}}(\sqrt{2} - 1)$

C) $2\pi r_{\text{old}}(\sqrt{2} - 1)$

D) $2r_{\text{old}}(\sqrt{2}\pi - 1)$

13. If $x + y = 10$ and $x^3 + y^3 = 1170$, then the value of xy is:

A) $-\frac{23}{3}$

B) $\frac{3}{28}$

C) $-\frac{17}{3}$

D) $\frac{3}{8}$

14. If $\frac{4}{3x^2 - 6x + 4} = 4$, then the value of $\frac{1}{x^2 + 8x + 9}$ equals:

A) $\frac{1}{24}$

B) $\frac{1}{15}$

C) $\frac{1}{12}$

D) $\frac{1}{18}$

15. If $\sin(B) + 2\csc(B) = 3$, then $\cos(B)$ is equal to:

A) $-\frac{4}{3}$

B) 0

C) $\frac{1}{2}$

D) -2

16. What is $\log_2(64) - \log_5(125)$ equal to?

A) 3

B) 4

C) 5

D) 6

17. The perimeter of a regular hexagon is equal to the circumference of a circle. What is the ratio of the area of the hexagon to the area of the circle?

A) $\frac{\pi\sqrt{3}}{4} : \frac{9}{\pi}$

B) $\frac{\pi\sqrt{6}}{4} : \frac{3}{\pi}$

C) $\frac{\sqrt{3}}{2} : \frac{3}{\pi}$

D) $\frac{\sqrt{3}}{4} : \frac{9}{\pi}$

18. If $\sin 45^\circ = m$, then the value of $\sin 135^\circ$ equals to:

A) $\sqrt{2}m$

B) m

C) $\sqrt{2} - m$

D) $m + \sqrt{2}$

19. Jeff Bezos, for some peculiar reason, purchases m amount of apples. He turns $t\%$ of them into apple sauce. How many apples are left?

A) $\frac{100m-t}{100}$

B) $\frac{100m-mt}{100}$

C) $\frac{m-100mt}{100}$

D) $\frac{mt-100mt}{100m}$

20. A Lamborghini Huracán car is traveling on a straight road at 180 km/h. Calculate the distance traveled by the car in 15 seconds.

A) 500 m

B) 750 m

C) 800 m

D) 900 m



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