

Mock NBT MAT Paper 1 Memo

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) $\frac{1}{b+a}$ 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 units^2 B) 4.5 units^2 C) 9 units^2 D) 10 units^2

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

Find more papers at www.eulereducation.com/nbt-practice

Enroll in our NBT Prep workshop!

We also host online NBT Preparation Workshop Weeks every weekend where we give you guidance and insights on how to ace the NBT exams, how to manage time, as well as a deep dive into the tactics our two successful NBT tutors Eryn & Thuto, have used to achieve over 90% for their NBTs. Tell your parents about us and enroll today at the link below and use our discount code **NBT2025** for 10% off your booking :) **(First 40 students to book get the discount!)**



150+
Students helped

★★★★★
Rated 4.9 stars on JotForm

6+ years
in the game

Facebook icon
Liked by 2,600+ parents

NBT workshop enrollment link: www.eulereducation.com/nbt

Get more NBT mock papers at www.eulereducation.com/nbt-practice
Copyright © 2024 Euler Education (Pty) Ltd.

Visit our website and follow us on social media to receive new NBT mock papers and insights on how to ace the NBTs and improve your Math or Science scores with ease.



@eulereducation



Euler Education