

Pre-Calculus Historical and Numerical Foundations

Mathematics · Answer Key · 15 Questions

1. In what year did John Napier publish 'Mirifici Logarithmorum Canonis Descriptio', which introduced the concept of logarithms to the world?

- A) 1594
- B) 1614**
- C) 1624
- D) 1644

2. Which Swiss mathematician, born in 1707, is credited with introducing the standard notation 'e' for the base of the natural logarithm?

- A) Leonhard Euler**
- B) Jacob Bernoulli
- C) Johann Bernoulli
- D) Gabriel Cramer

3. The value of the mathematical constant tau (τ), often used as an alternative to 2π , is defined as exactly what value?

- A) 6.283185307179586**
- B) 6.283185307179585
- C) 6.283185307179589
- D) 6.283185307179590

4. In 1748, Leonhard Euler published 'Introductio in analysin infinitorum', a foundational text for Pre-Calculus. How many volumes did this specific foundational work contain?

- A) 1
- B) 2**
- C) 3
- D) 4

5. What is the precise value of the imaginary unit 'i', defined as the square root of what integer?

- A) 0
- B) -1**
- C) 1
- D) -2

6. The first known use of the term 'function' is attributed to Gottfried Wilhelm Leibniz in a manuscript dated to what year?

- A) 1673
- B) 1683
- C) 1693
- D) 1703

7. The number of radians in a full circle, 2π , is approximately 6.283185307179586. What is the 10th decimal digit of this value?

- A) 5
- B) 8
- C) 6
- D) 3

8. Who is the mathematician that developed the modern notation for the trigonometric functions sine, cosine, and tangent in the early 18th century?

- A) Leonhard Euler
- B) Brook Taylor
- C) Colin Maclaurin
- D) Joseph-Louis Lagrange

9. The Golden Ratio, represented by the Greek letter phi (ϕ), is equal to what exact radical expression?

- A) $(1+\sqrt{5})/2$
- B) $(1+\sqrt{3})/2$
- C) $(\sqrt{5}+2)/2$
- D) $(\sqrt{2}+1)/2$

10. In the year 1637, which French philosopher and mathematician published 'La Géométrie', introducing the coordinate plane now named after him?

- A) Pierre de Fermat
- B) Blaise Pascal
- C) René Descartes
- D) Gilles de Roberval

11. What is the value of the constant 'gamma' (Euler-Mascheroni constant), rounded to four decimal places?

- A) 0.5772
- B) 0.6180
- C) 0.3141
- D) 0.2718

12. The study of conic sections dates back to Menaechmus, who lived approximately between which years?

- A) 480-410 BCE
- B) 380-320 BCE**
- C) 280-210 BCE
- D) 180-120 BCE

13. What is the numerical degree measure equivalent to 1 radian, expressed to two decimal places?

- A) 57.29°**
- B) 58.12°
- C) 59.45°
- D) 56.78°

14. Archimedes, in his work 'Measurement of a Circle', bounded the value of π between which two fractions?

- A) $3 \frac{1}{7}$ and $3 \frac{10}{71}$
- B) $3 \frac{10}{71}$ and $3 \frac{1}{7}$**
- C) $\frac{22}{7}$ and $\frac{223}{71}$
- D) $3 \frac{1}{8}$ and $3 \frac{1}{4}$

15. In the year 1715, Brook Taylor published his work containing the general formula for the expansion of functions. What was the title of this work?

- A) Methodus Incrementorum Directa et Inversa**
- B) Introductio in analysin infinitorum
- C) Arithmetica Infinitorum
- D) De Analysi