

TRIGONOMETRIC FUNCTIONS PROBLEMS AND SOLUTIONS

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Trigonometric Functions: Problems and Solutions

Trigonometric functions play a crucial role in various branches of mathematics and science. They are used to describe periodic phenomena, solve geometric problems, and analyze data. This article presents a selection of trigonometric function problems with detailed solutions to enhance your understanding of these functions.

Problem 1:

Find the value of $\sin(\pi/3) + \cos(\pi/4)$

Solution:

$\sin(\pi/3) = \sqrt{3}/2$ and $\cos(\pi/4) = \sqrt{2}/2$. Therefore, $\sin(\pi/3) + \cos(\pi/4) = \sqrt{3}/2 + \sqrt{2}/2 = \frac{\sqrt{3} + \sqrt{2}}{2}$.

Problem 2:

Simplify the expression: $\tan(\pi/6) - \cot(\pi/3)$

Solution:

$\tan(\pi/6) = 1/\sqrt{3}$ and $\cot(\pi/3) = \sqrt{3}$. Therefore, $\tan(\pi/6) - \cot(\pi/3) = 1/\sqrt{3} - \sqrt{3} = -2/\sqrt{3}$.

Problem 3:

Find the angle θ such that $\sin(\theta) = 0.5$

Solution:

$$\theta = \sin^{-1}(0.5) = 30^\circ \text{ or } \pi/6$$

Problem 4:

Solve the equation: $2\cos(2x) + 1 = 0$

Solution:

$\cos(2x) = -1/2$. Therefore, $2x = 2\pi/3 + 2\pi n$ or $2x = 4\pi/3 + 2\pi n$, where n is an integer.

Problem 5:

Prove the identity: $\sin(A + B) = \sin(A)\cos(B) + \cos(A)\sin(B)$

Solution:

Using the angle addition formula, we have $\sin(A + B) = \sin(A)\cos(B) + \cos(A)\sin(B)$. Therefore, the identity is true.

What's Going On Chords Ver 5 by Marvin Gaye**What is "What's Going On" by Marvin Gaye?**

"What's Going On" is a iconic protest song written and performed by Marvin Gaye, released in 1971. It serves as the title track of his album of the same name.

What are the chords for "What's Going On" Version 5?

Version 5 of "What's Going On" features different chord progressions from the original version. The main chords used are:

- Am (A minor)
- G (G major)
- F (F major)
- Dm (D minor)
- E7 (E7 dominant seventh)

Can you provide a chord chart for Version 5?

Verse 1: Am G F Dm E7 Am

Chorus: Am G7 C F Dm G7 C F E7 Am

Verse 2: Am G F Dm E7 Am

Chorus: Am G7 C F Dm G7 C F E7 Am

Bridge: Dm G7 C F G7 C F

Outro: Am G7 C F Dm G7 C F E7 Am

How does Version 5 differ from other versions?

Version 5 of "What's Going On" differs from other versions in its use of a harmonica solo and a more upbeat tempo. It also features a slightly different chord progression in the bridge section.

What is the significance of "What's Going On" Ver 5?

Version 5 of "What's Going On" is a testament to the versatility of Marvin Gaye's music. It demonstrates his ability to create different interpretations of the same song, while maintaining its powerful message of social and political commentary.

Year 11 GCSE History Past Question Bank: Medicine

Paragraph 1

Question: Explain the significance of the work of Edward Jenner in the development of medicine.

Answer: Edward Jenner, an English physician, conducted pioneering work on vaccination in the late 18th century. He developed a method of smallpox inoculation using cowpox, which provided immunity to smallpox without causing the disease itself. This breakthrough revolutionized disease prevention and had a profound impact on the health of populations worldwide.

Paragraph 2

Question: Describe the role of public health reforms in improving health conditions in Britain during the Victorian era.

Answer: During the Victorian era, Britain implemented a series of public health reforms, including the Public Health Act of 1848. These reforms aimed to address the unsanitary conditions and overcrowding prevalent in urban areas. The reforms included measures such as building new water and sewage systems, improving sanitation, and enforcing regulations on housing and pollution.

Paragraph 3

Question: Analyze the impact of the discovery of antibiotics on modern medicine.

Answer: The discovery of antibiotics in the 20th century marked a turning point in the treatment of infectious diseases. Previously, many diseases were fatal, but antibiotics revolutionized treatment options and significantly reduced mortality rates. Antibiotics work by inhibiting the growth or killing bacteria, making them effective against a wide range of infections.

Paragraph 4

Question: Explain the controversy surrounding the development and use of the atomic bomb in the 20th century.

Answer: The development and use of the atomic bombs in World War II remains a highly controversial topic. The bombs caused immense devastation in Hiroshima and Nagasaki, Japan, raising ethical and moral questions about the use of weapons of mass destruction. The long-term effects of nuclear radiation and the threat of nuclear war continue to spark debate.

Paragraph 5

Question: Discuss the challenges facing healthcare systems in the 21st century.

Answer: Modern healthcare systems face numerous challenges, including rising costs, increasing demand for services, and the emergence of new diseases. The aging population and the growing prevalence of chronic conditions put a strain on healthcare budgets and infrastructure. Healthcare systems must adapt to meet these

challenges by implementing innovative technologies, promoting preventive care, and addressing healthcare disparities.

Unlocking the Knowledge of Wordly Wise 3000 Book 3 with the Ultimate Answer Key

Wordly Wise 3000 is an indispensable resource for vocabulary building, empowering students to expand their word knowledge and excel in reading comprehension. Book 3 of the series presents a treasure trove of advanced vocabulary words, and the intricate Answer Key provides the definitive solutions to ensure complete understanding.

Paragraph 1: Unraveling Etymology and History

1. What does the term "etymology" mean? Answer: The study of the origin and history of words.
2. Identify the etymology of the word "chronology." Answer: Greek chronos (time) + logos (knowledge) = chronology (study of time).

Paragraph 2: Defining New Vocabulary

3. Define "ephemeral." Answer: Lasting for a very short time.
4. What does "ubiquitous" mean? Answer: Present everywhere at the same time.

Paragraph 3: Understanding Synonyms and Antonyms

5. Provide a synonym for "precursor." Answer: Forerunner.
6. Identify the antonym of "abstain." Answer: Indulge.

Paragraph 4: Contextual Comprehension

7. In the sentence "The artist's work was characterized by its enigmatic aura," what is the meaning of "enigmatic"? Answer: Mysterious or puzzling.
8. Explain the meaning of "The verbose politician droned on for hours." Answer: The politician spoke excessively and unintelligibly.

Paragraph 5: Sentence Completions

9. Complete the sentence: "The museum curator was an _____ of ancient artifacts." Answer: Aficionado
10. Fill in the blank: "The athlete's _____ determination earned her the gold medal." Answer: Unwavering

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