1DAE-AMP1-Q1-THEORY Series Demo - incl Answers -

FULL NAME (IN CAPITALS) **GROUP + Date**

Eligibility

Beware: **nameless bundles are not eligible** and score a total of 0/20 for this exam part! Similarly if pages of this bundle appear to be missing, you are graded totally 0/20 for this exam part. This part is held **books closed**: only writing gear is allowed. You may use up to **1 hour maximum** to complete this: raise your hand to announce whenever ready, without leaving your seat. This part requires your signature on the **theory attendance list**.

Grading

Multiple Choice questions with positive correction for guessing: each correct answer scores while wrong answers score 0. From your 7^{th} correct answer onwards, you are increasingly rewarded according to this array:

correct answers	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
grade	0.8	1.6	2.4	3.2	4	4.8	5.6	7.0	8.4	10

Instructions

This bundle's blank **flipsides serve as scratch** paper. You need to copy your final answers into the grid below, specifically in the box under the corresponding question number. Your **answers in this grid** are considered to be definitive. The grading of this theory bundle will be automated: write in readable CAPITALS and do for example not write:
'the coordinate is $A(-4, 11)$' but instead just write the shortest answer fitting '$(-4, 11)$'.

Answer grid SeriesDemo

TARGET QUESTIONS

No. 1	**No. 2**	**No. 3**	**No. 4**	**No. 5**	**No. 6**	**No. 7**	**No. 8**	**No. 9**	**No. 10**
$\frac{13\pi}{12} RAD$	0	NO	5	$\frac{\pi}{3}$	$\frac{-\pi}{6}$	YES	ARCTAN2(a_2; a_1)	$0\ \frac{m}{s}$	$1D$

MULTIPLE CHOICE QUESTIONS

No. 11	**No. 12**	**No. 13**	**No. 14**	**No. 15**	**No. 16**	**No. 17**	**No. 18**	**No. 19**	**No. 20**
D	A	C	A	D	E	E	C	E	B

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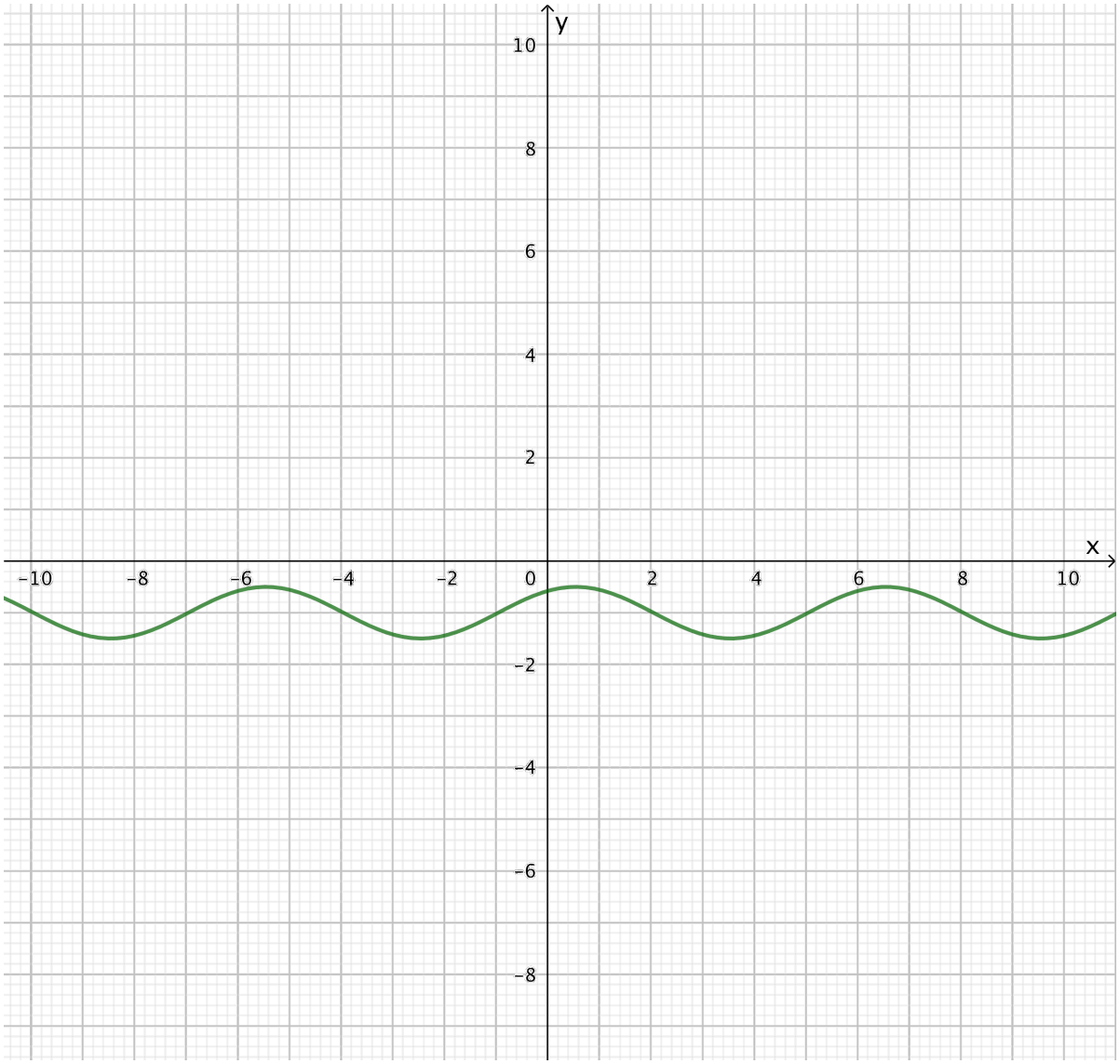
Target questions

1. Convert and maximally simplify the angle of $195°$ to radian.
2. Which angle do the altitude and the perpendicular bisector through the base of an isosceles triangle subtend?
3. The sum of two obtuse angles exceeds the elementary period (Yes/No)?
4. Calculate and maximally simplify the distance between the two points $A(-1, 2)$ and $B(3, 5)$.
5. Retrieve the angular frequency (or pulsation) ω from the graph of this general sine function:



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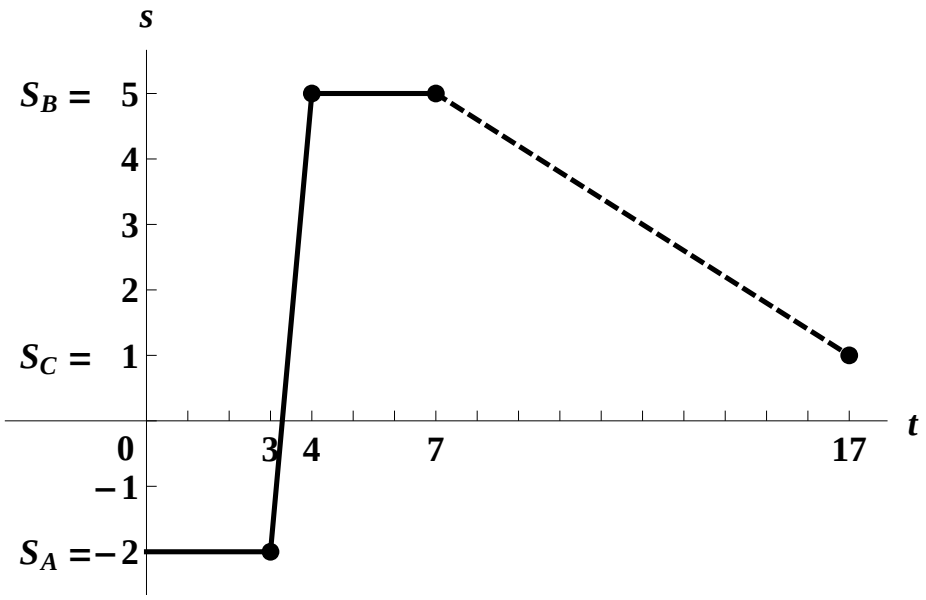
6. Determine $\arctan(-\frac{\sqrt{3}}{3})$ in radian.

7. Any 2D vector is uniquely defined by its length and its direction (comprising orientation and sense) (Yes/No)?

8. Express for any 2D vector $\vec{a} = \begin{pmatrix} a_1 \\ a_2 \end{pmatrix}$ its direction as the according inverse trigonometric statement based on the vector component(s)

9. Determine the constant velocity (in $\frac{m}{s}$) between second 0 and second 3 from underneath graph of which both axes are in S.I.-units.



10. Which dimensional space is minimally required to allow for a free fall?

Multiple Choice questions

11. The trigonometric measure $\cot\alpha$ is defined in a right triangle as the ratio:

A) $\frac{\text{opposite side}}{\text{hypotenuse}}$	B) $\frac{\text{adjacent side}}{\text{hypotenuse}}$	C) $\frac{\text{opposite side}}{\text{adjacent side}}$	D) $\frac{\text{adjacent side}}{\text{opposite side}}$

12. Which single statement is false for angles $\alpha \neq k\frac{\pi}{2}\ rad$ given an integer variable $k \in \mathbb{Z}$?

A) $\cot(\frac{\pi}{2}-\alpha) = \frac{1}{\tan\alpha}$	B) $\frac{\cos(\frac{\pi}{2}-\alpha)}{\sin(\alpha)} = 1$	C) $\tan(\frac{\pi}{2}-\alpha) = \cot(\alpha)$	D) $(\cos(\frac{\pi}{2}-\alpha))^2 + (\cos\alpha)^2 = 1$

13. Which single statement is false for angles $\alpha \neq k(90°)$ given an integer variable $k \in \mathbb{Z}$?

A) $\cot\alpha = \frac{1}{\tan\alpha}$	B) $(\sin\alpha)^2 + (\cos\alpha)^2 = 1$	C) $1 + (\tan\alpha)^2 = \frac{1}{\cos\alpha}$	D) $(\tan\alpha)^2(\cot\alpha) = \tan\alpha$

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14. Which single statement is false for angles $\alpha \neq k(90°)$ given an integer variable $k \in \mathbb{Z}$?

A) $\cot(-\alpha)\tan\alpha = 1$	B) $(\sin(-\alpha))^2 + (\cos\alpha)^2 = 1$	C) $\cot(-\alpha) = \frac{1}{\tan(-\alpha)}$	D) $\cos(-\alpha) = \cos\alpha$

15. Which one of the statements is true? We define the intercept of a general sine function as:

A) the outer coefficient of sine which widens the graph vertically
B) the inner coefficient of sine which stretches the graph horizontally
C) its argument corresponding to the 'first incoming baseline crossing'
D) the constant term in its function recipe
E) none of these

16. Select the one true domain in $\mathbb{R}$ of the function $\arctan(x)$

A) $[-1, 1]$	B) $]-1, 1[$	C) $[-\frac{\pi}{2}, \frac{\pi}{2}]$	D) $]-\frac{\pi}{2}, \frac{\pi}{2}[$	E) none of these

17. Which single measure of the underneath is a vector?

A) distance	B) humidity	C) area	D) frequency	E) none of these

18. Which single one of these statements is true? Base vectors are 'linearly independent' means:

A) they have a linear combination which equals the zero vector
B) their lengths are mutually different
C) none of them can be a linear combination of the remaining ones
D) they provide a linear combination to create any requested vector in their space
E) none of these

19. A framerate of 60 fps corresponds to a deltatime of

A) 63 ms	B) 50 ms	C) 42 ms	D) 33 ms	E) 17 ms

20. The S.I.-unit of acceleration is:

A) $\frac{m}{s}$	B) $\frac{m}{s^2}$	C) fps	D) $\frac{kg}{s^2}$	E) mph