

GSE PreCalculus

Name Key

SLO Review: Vectors/Inverse Trig/LOS-LOC/Solving Trig Equations

Vectors:

* Terminal - initial

1. Find the \vec{v} with initial point $(-3, 1)$ and terminal point $(4, 5)$

- a. $7\vec{i} - 4\vec{j}$ b. $-7\vec{i} - 4\vec{j}$ c. $\vec{i} + 6\vec{j}$ d. $7\vec{i} + 4\vec{j}$
- Handwritten: $(4, 5) - (-3, 1) = (4 - (-3), 5 - 1) = 7\vec{i} + 4\vec{j}$*

2. Find $\vec{u} + \vec{v}$ if $\vec{u} = \langle -3, -5 \rangle$ and $\vec{v} = \langle -6, 2 \rangle$

- a. $\langle -9, -3 \rangle$ b. $\langle 3, -3 \rangle$ c. $\langle -3, 9 \rangle$ d. $\langle 18, -10 \rangle$
- Handwritten: $\langle -3 + (-6), -5 + 2 \rangle = \langle -9, -3 \rangle$*

3. If $\|\vec{v}\| = 7$ and $\theta = 60^\circ$ calculate \vec{v}

$\langle \|\vec{v}\| \cos \theta, \|\vec{v}\| \sin \theta \rangle$ so, $\langle 7 \cos 60, 7 \sin 60 \rangle$

- a. $-\frac{7}{2}\vec{i} - \frac{7\sqrt{3}}{2}\vec{j}$ b. $\frac{7}{2}\vec{i} + \frac{7\sqrt{3}}{2}\vec{j}$ c. $-\frac{7\sqrt{2}}{2}\vec{i} - \frac{7\sqrt{2}}{2}\vec{j}$ d. $\frac{7\sqrt{3}}{2}\vec{i} - \frac{7}{2}\vec{j}$
- Handwritten: $\frac{7}{2}\vec{i}, \frac{7\sqrt{3}}{2}\vec{j}$*

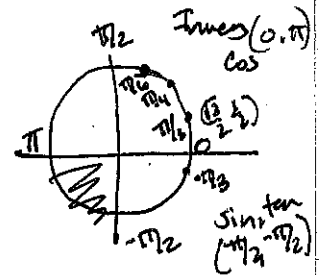
linear form

4. Which pairs of vectors are orthogonal

*Use dot product * Two vectors with a dot product of 0 are orthogonal*

- a. $2\vec{i} + 5\vec{j}; 8\vec{i} + 4\vec{j}$ b. $3\vec{i} - 2\vec{j}; -5\vec{i} + \vec{j}$ c. $3\vec{i} + 6\vec{j}; -4\vec{i} + 2\vec{j}$ d. $2\vec{i} + 5\vec{j}; 2\vec{i} + 3\vec{j}$

$-12 + 12 = 0$



Inverse trig functions:

1. Given $y = \arccos x$, state the range in interval notation

- a. $[0, \pi]$ b. $[-\frac{\pi}{2}, \frac{\pi}{2}]$ c. $[-1, 1]$ d. $[\frac{\pi}{2}, \frac{3\pi}{2}]$

2. Evaluate $\sin(\arcsin(\frac{2}{9}))$

Calculator

- a. $\frac{2}{9}$ b. $-\frac{2}{9}$ c. $\frac{\sqrt{11}}{9}$ d. $-\frac{\sqrt{11}}{9}$

Handwritten: $x = \arcsin y$, $y = \sin x$

* 3. Identify the inverse of $y = \arcsin x$

- a. $y = \sin x$ b. $y = \cos x$ c. $y = \csc x$ d. $x = \csc y$

4. Evaluate $\arcsin(-\frac{\sqrt{3}}{2})$

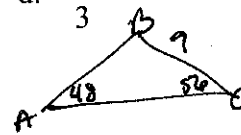
Calculator Radians

- a. $-\frac{\pi}{3}$ b. $\frac{\pi}{3}$ c. $-\frac{4\pi}{3}$ d. $\frac{4\pi}{3}$

LOS-LOC/Solving Trig Equations

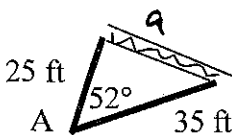
1. Given $\triangle ABC$ with $a=9$, $A=48^\circ$, and $C=56^\circ$. Find c .

10.04



$\frac{\sin 48}{9} = \frac{\sin 56}{c}$
 $c \sin 48 = 9 \sin 56$
 $c = \frac{9 \sin 56}{\sin 48}$

2. You want to find the length of a bridge in the diagram shown. From point A, you measure the distance to the bridge on either side and the angle formed. How wide is the bridge?



$a^2 = b^2 + c^2 - 2bc \cos A$
 $a^2 = 25^2 + 35^2 - 2(25)(35) \cos 52$
 $a^2 = 1850 - 1750 \cos 52$

$a^2 = 1850 - 1077.4$
 $a^2 = 772.6$
 $a = \sqrt{772.6}$

X = 27.9
4 solutions unit circle

$60^\circ, 120^\circ$

3. Solve $2 \sin x - \sqrt{3} = 0$ in the interval $(0, 2\pi)$ (Hint: need all answers on unit circle here)

4. How many solutions does $\frac{2 \cos^2 x - 1}{2} = \frac{1}{2}$ have in the interval $(0, 2\pi)$

$\sqrt{\cos^2 x} = \sqrt{1/2}$
 $x = \pm \sqrt{2}/2$

$2 \sin x - \sqrt{3} = 0$
 $2 \sin x = \frac{\sqrt{3}}{2}$
 $\sin x = \frac{\sqrt{3}}{2}$

GSE PreCalculus
SLO Review - Daily Quiz
Intro To Trig

Name Key

1. State the exact value of $\cos\left(\frac{3\pi}{4}\right)$

Calculator must be in radians

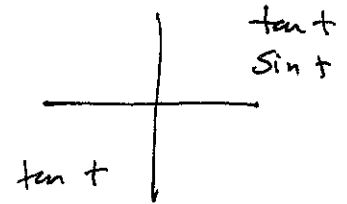
- a. $-\frac{\sqrt{3}}{2}$ b. $-\frac{\sqrt{2}}{2}$ c. $\frac{\sqrt{2}}{2}$ d. $\frac{\sqrt{3}}{2}$

2. Which of the following is coterminal to $\theta = -\frac{5\pi}{12}$

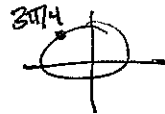
- a. $-\frac{19\pi}{12}$ b. $-\frac{7\pi}{12}$ c. $\frac{7\pi}{12}$ d. $\frac{19\pi}{12}$

3. Determine the quadrant that θ lies if $\tan \theta > 0$ and $\sin \theta > 0$

- a. 1 b. 2 c. 3 d. 4



4. Find the reference angle of $\theta = \frac{11\pi}{4} - 2\pi = \frac{3\pi}{4}$



$\pi - \frac{3\pi}{4}$

- a. $\frac{\pi}{4}$ b. $\frac{3\pi}{4}$ c. $\frac{5\pi}{4}$ d. $\frac{7\pi}{4}$

Conics

5. Find the length of the major axis: $\frac{(x+2)^2}{25} + \frac{(y-1)^2}{16} = 1$

$a^2 = 25$
 $a = 5$

$a = 2(5)$
 $= 10$

- a. 5 b. 10 c. 4 d. 8

6. Identify the shape of the graph: $4x^2 - 12 = y^2$

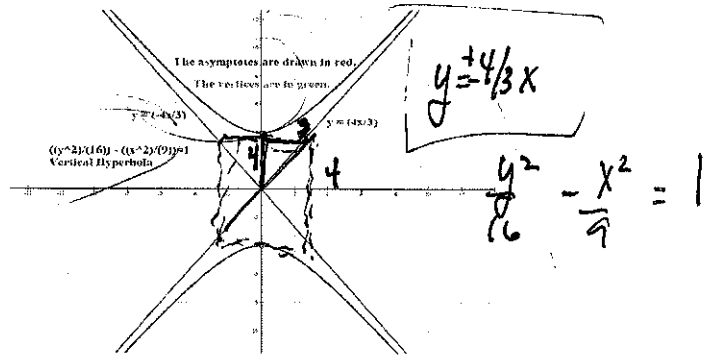
$\frac{4x^2}{12} - \frac{y^2}{12} = \frac{12}{12}$

$\frac{x^2}{3} - \frac{y^2}{12} = 1$

- a. Parabola b. Circle c. Ellipse d. Hyperbola

7. Find the equation of the following graph:

- a. $9y^2 - 16x^2 = 144$
 b. $-16y^2 - 9x^2 = 144$
 c. $16x^2 - 9y^2 = 144$
 d. $9x^2 - 16y^2 = 144$



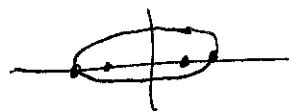
8. Find the foci: $\frac{x^2}{16} + \frac{y^2}{9} = 1$

- a. $(0, \pm\sqrt{7})$ b. $(\pm\sqrt{7}, 0)$ c. $(\pm 5, 0)$ d. $(0, \pm 5)$

$c^2 = a^2 - b^2$

$c^2 = 16 - 9$

$\sqrt{c^2} = \sqrt{7}$



Matrices

9. Calculate $\begin{bmatrix} 3 & 5 \\ -1 & 2 \end{bmatrix} \begin{bmatrix} 4 \\ 1 \end{bmatrix}$ $2 \times 2 \quad 2 \times 1$

a. $\begin{bmatrix} 17 \\ -2 \end{bmatrix}$

b. $\begin{bmatrix} 11 \\ 22 \end{bmatrix}$

c. $[17 \quad -2]$

d. $[11 \quad 22]$

10. What matrix do you multiply by to solve:

$$\begin{bmatrix} -3 & 4 \\ 7 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ -5 \end{bmatrix}$$

$A \quad x \quad B$

$X = A^{-1} B$

$(2 \times 2)(2 \times 1) = 2 \times 1$

a. $\begin{bmatrix} 3 & 7 \\ 4 & 1 \end{bmatrix}$

b. ~~$\begin{bmatrix} 1 & 4 \\ 25 & 25 \\ 7 & 3 \\ 25 & 25 \end{bmatrix}$~~

$A^{-1} \text{ Inverse}$

c. ~~$\begin{bmatrix} 3 & 7 \\ 25 & 25 \\ 4 & 1 \\ 25 & 25 \end{bmatrix}$~~

d. $\begin{bmatrix} 7 & -1 \\ 3 & -4 \end{bmatrix}$

11. If $M_{2 \times 3}$ is multiplied by $N_{3 \times 1}$ what are the dimensions of $M \cdot N$?

$(2 \times 3)(3 \times 1)$

a. 3×3

b. 2×1

c. 1×2

d. 3×1

$= 2 \times 1$

12. Calculate $\begin{vmatrix} 5 & 1 \\ x & 2 \end{vmatrix}$

a. $10 - x$

b. $10 + x$

c. $2 - 5x$

d. $5 - 2x$

$10 - x$