



LESSON 3

MA 16200 · SPRING 2023

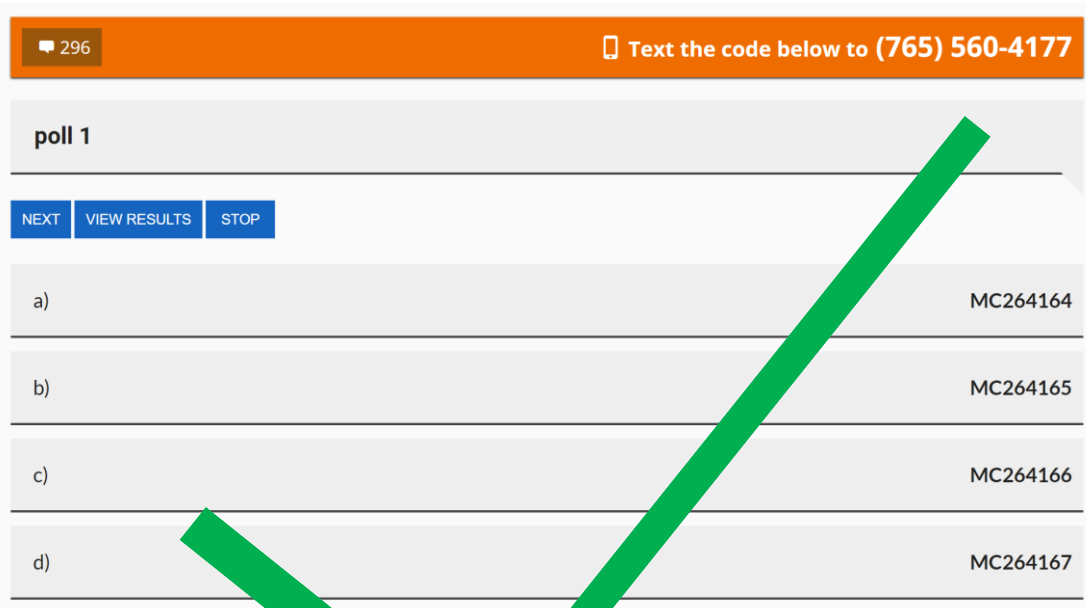
DR. HOOD



USING HOTSEAT

Please submit your answers under Polls

Answers submitted to “Thoughts” (the message board) will not be graded

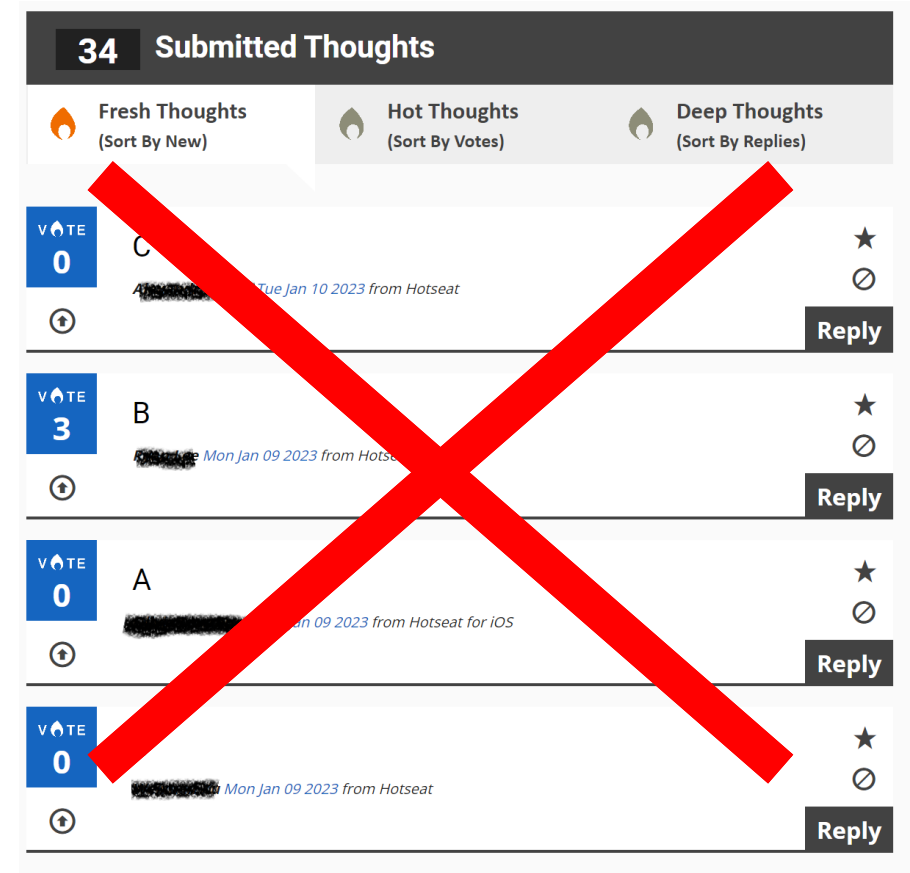


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poll 1

NEXT VIEW RESULTS STOP

a)	MC264164
b)	MC264165
c)	MC264166
d)	MC264167



34 Submitted Thoughts

Fresh Thoughts (Sort By New) Hot Thoughts (Sort By Votes) Deep Thoughts (Sort By Replies)

VOTE 0 C [Redacted] Tue Jan 10 2023 from Hotseat

Reply

VOTE 3 B [Redacted] Mon Jan 09 2023 from Hotseat

Reply

VOTE 0 A [Redacted] Mon Jan 09 2023 from Hotseat for iOS

Reply

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WARM UP

Let $\vec{u} = 5\hat{i} + 3\hat{k}$ and $\vec{v} = 7\hat{j} - \hat{k}$. What is $\vec{u} + \vec{v}$ (in position vector form)?

a) $\langle 5, 10, -1 \rangle$

b) $\langle 12, 2, 0 \rangle$

c) $\langle 5, 7, 2 \rangle$

$$\vec{u} = \langle 5, 0, 3 \rangle$$

$$\vec{v} = \langle 0, 7, -1 \rangle$$

$$\vec{u} + \vec{v} = \langle 5, 7, 2 \rangle$$

ANNOUNCEMENTS

- **HW 3**

- Some questions ask for angles in radians and some ask for angles in degrees
- Read the instructions carefully

- **MA16290: "Data Science Lab: Calculus."**

- 1 credit companion course to MA 16200
- Opportunity to earn honors credit
- Apply calculus to problems in data science

OFFICE HOURS

- **Dr. Hood's Office Hours:**

- Mon, Wed at 12:30 – 1:30pm in MATH 844
- Fri at 1:00 – 2:00pm in MATH 844

- **TA's have office hours in the Math Resource Room (MRR)**

- WTHR 313
- Schedule posted online:

- <https://www.math.purdue.edu/academic/courses/helproom>

SUPPLEMENTAL INSTRUCTION

SI Leader	Session 1	Session 2	Session 3	Office hour
Alex Hunton	Mon @ 7:30 PM UNIV 001	Tue @ 7:30 PM UNIV 003	Thu @ 4:30 PM UNIV 117	Thu @ 2:00 PM WILY C215
Phoebe Bailey	Sun @ 6:30 PM WILY C215	Mon @ 6:30 PM WTHR 420	Wed @ 6:30 PM WTHR 420	Wed @ 10:30 AM WILY C215

POLL 1

If $\vec{u} = \langle 1, 1, 1 \rangle$ and $\vec{v} = \langle 2, -1, -1 \rangle$, what is the angle θ between \vec{u} and \vec{v} ?

a) $\theta = 0$

b) $\theta = \frac{\pi}{2}$

c) $\theta = \pi$

$$1 \cdot 2 + 1 \cdot (-1) + 1 \cdot (-1) = \vec{u} \cdot \vec{v} = |\vec{u}| |\vec{v}| \cos \theta$$

$$2 - 1 - 1 = 0 = |\vec{u}| |\vec{v}| \cos \theta$$

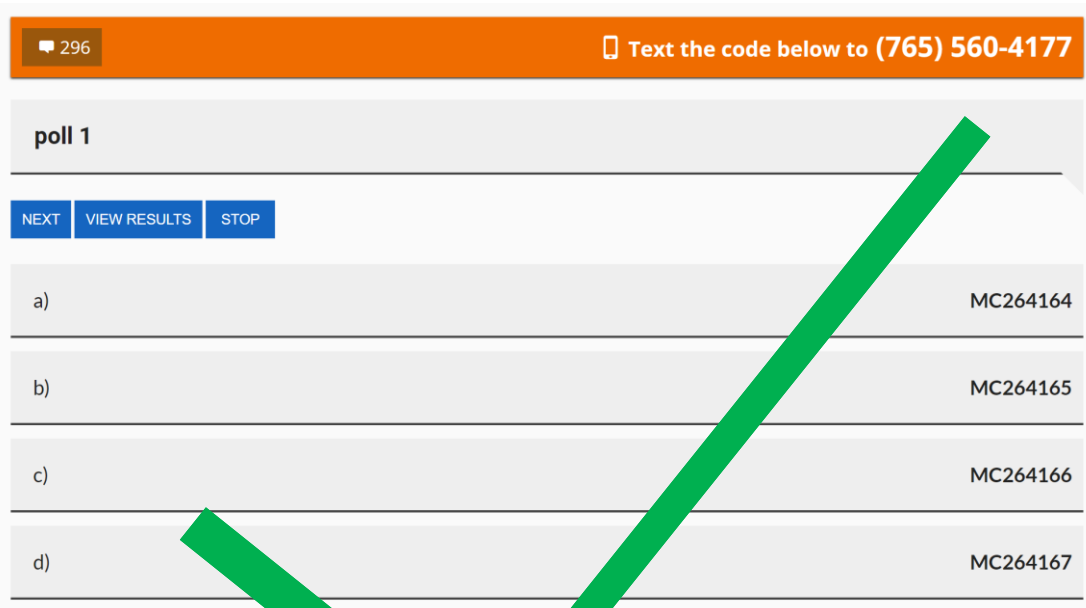
$$0 = \cos \theta$$

$$\theta = \frac{\pi}{2}$$

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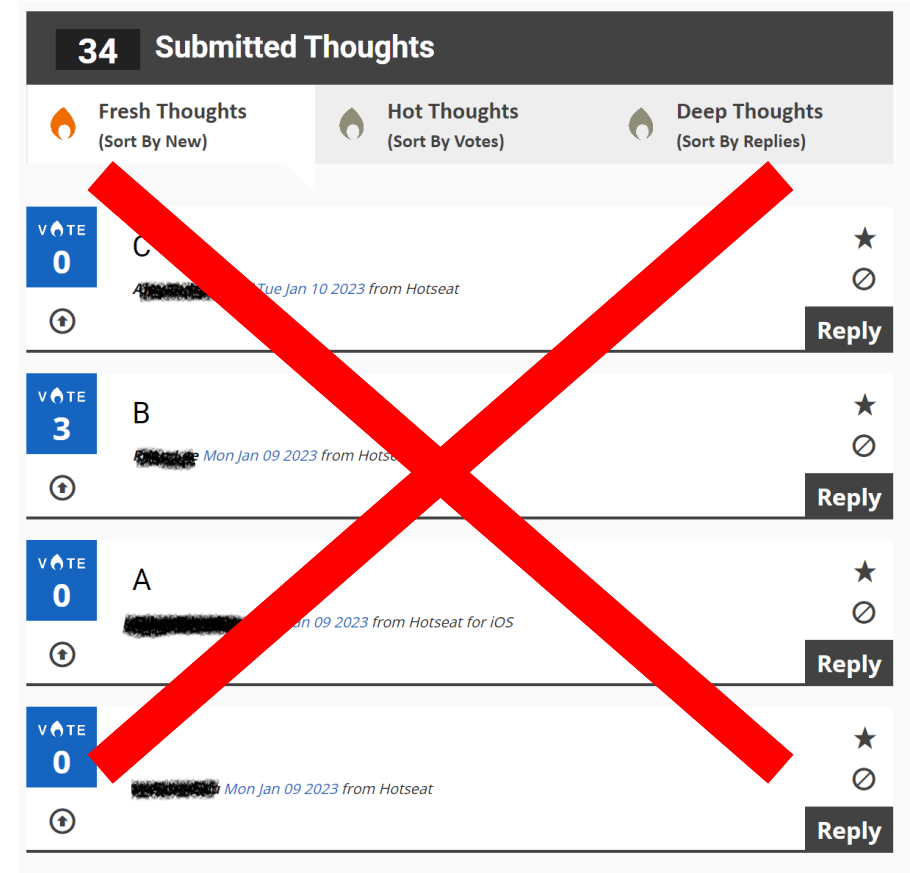
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A large green checkmark is overlaid on the poll interface, indicating that submitting answers under polls is the correct method.



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POLL 2 – EXTRA CREDIT

Which of the following vectors is orthogonal to $\hat{i} = \langle 1, 0, 0 \rangle$?

a) $\hat{j} = \langle 0, 1, 0 \rangle$

b) $\hat{k} = \langle 0, 0, 1 \rangle$

c) Both \hat{j} and \hat{k}

d) Neither \hat{j} nor \hat{k}

$$\hat{i} \cdot \hat{j} = 1 \cdot 0 + 0 \cdot 1 + 0 \cdot 0 = 0$$

$$\hat{i} \cdot \hat{k} = 0$$

POLL 3

If $\vec{u} = \langle 7, -3, 2 \rangle$ and $\vec{v} = \langle 1, 0, 0 \rangle$, what is the orthogonal projection: $\text{proj}_{\vec{v}}(\vec{u})$?

a) 7

b) $\langle 7, 0, 0 \rangle$

c) $\left\langle \frac{49}{\sqrt{62}}, \frac{-21}{\sqrt{62}}, \frac{14}{\sqrt{62}} \right\rangle$