Instructions

- Homework will NOT be accepted through email or in person. Homework must be submitted through CourseWare BEFORE the deadline.
- Submit the completed assignment at [http://www.casa.uh.edu](http://www.casa.uh.edu) under "EMCF" and choose LecAlt03.

1. Which of the following planes is the same as $x - 2y + z = 0$?
   a. $10(x-1)-20(y-1)+10z=10$
   b. $-x+2(y-1)-z=1$
   c. $10(x-1)-20(y-1)+10z=0$
   d. $(x-1)-2(y+1)+(z-1)=0$
   e. None of these

2. Two lines are perpendicular if
   a. They don’t intersect
   b. They intersect
   c. Their direction vectors are scalar multiples of each other
   d. The dot product of their direction vectors is 0
   e. None of these

3. Find an equation for the plane which passes through the point $P(2, -1, -3)$ and is parallel to the plane $x - 2y + 3z -3 = 0$
   a. $(x+2)-2(y-1)+3(z-3)=0$
   b. $(x+2)+2(y-1)+3(z-3)=0$
   c. $(x-2)-2(y+1)+3(z+3)=0$
   d. $(x+2)+2(y+1)-3(z-3)=0$
   e. None of these
4. Find the cosine of the angle between the following planes
\[ 2x - y + 2z - 2 = 0 \quad \text{and} \quad x + 2y - 2z + 1 = 0 \]
\[ \cos \theta = \frac{4}{9} \]

\[ \begin{align*}
\text{a.} & \quad \frac{4}{9} \\
\text{b.} & \quad \frac{2}{3} \\
\text{c.} & \quad \frac{2}{3} \\
\text{d.} & \quad \frac{2}{3} \\
\text{e.} & \quad \text{None of these}
\end{align*} \]

5. The equation for a plane is derived using which vector operation?
\[ \begin{align*}
\text{a.} & \quad \text{The cross product} \\
\text{b.} & \quad \text{The dot product} \\
\text{c.} & \quad \text{The empty product} \\
\text{d.} & \quad \text{The gross domestic product} \\
\text{e.} & \quad \text{None of these}
\end{align*} \]

6. The correct answer for problem 1 from LecPop03_1 was which of the following?
\[ \begin{align*}
\text{a.} & \quad \text{A} \\
\text{b.} & \quad \text{B} \\
\text{c.} & \quad \text{C} \\
\text{d.} & \quad \text{D} \\
\text{e.} & \quad \text{E}
\end{align*} \]

7. If two planes intersect, this intersection will be a:
\[ \begin{align*}
\text{a.} & \quad \text{Point} \\
\text{b.} & \quad \text{Line} \\
\text{c.} & \quad \text{Plane} \\
\text{d.} & \quad \text{Scalar} \\
\text{e.} & \quad \text{None of the above}
\end{align*} \]

8. If two planes intersect, the range of values for the angle at which they meet is:
\[ \begin{align*}
\text{a.} & \quad \left[ -\frac{\pi}{2}, \frac{\pi}{2} \right] \\
\text{b.} & \quad \left[ 0, \frac{\pi}{2} \right] \\
\text{c.} & \quad [0, \pi] \\
\text{d.} & \quad [0, 2\pi] \\
\text{e.} & \quad \text{None of these}
\end{align*} \]
9. The correct answer for problem 2 from LecPop03_1 was which of the following?
   a. A
   b. B
   c. C
   d. D
   e. E

10. The correct answer for problem 4 from LecPop03_1 was which of the following?
    a. A
    b. B
    c. C
    d. D
    e. E