

Chapter 12

1. Find the cosine of the angle between the vectors \mathbf{u} and \mathbf{v} . (12.3)

(a) $\mathbf{u} = \langle 4, -3, 0 \rangle$
 $\mathbf{v} = \langle 2, 6, -3 \rangle$

2. Find the projection of \mathbf{u} onto \mathbf{v} . (12.3)

(a) $\mathbf{u} = \langle 4, -3, 0 \rangle$
 $\mathbf{v} = \langle 2, 6, -3 \rangle$

3. Give a vector normal to both \mathbf{u} and \mathbf{v} . (12.4)

(a) $\mathbf{u} = \langle 4, -3, 0 \rangle$
 $\mathbf{v} = \langle 2, 6, -3 \rangle$

4. Give a vector equation and parametric equations for the line. (12.5)

(a) The line passing through $(1, 3, -2)$ and parallel to $\langle 3, 0, 1 \rangle$.

5. Give the distance from the point to the line: (12.5)

(a) $(0, -4, 1)$ to $\mathbf{r}(t) = \langle 3 + t, -2t, 1 + 2t \rangle$

6. Give an equation for the plane. (12.5)

(a) The plane passing through $(1, 3, -2)$ and normal to $\langle 3, 0, 1 \rangle$.

7. Give the distance from the point to the plane: (12.5)

(a) $(0, -4, 1)$ to $x - 2y + 2z = 2$

8. Sketch the curve given by the equation in the appropriate coordinate plane, and then sketch the cylinder in xyz space given by the equation. (12.6)

(a) $y = x^2$

9. Sketch the three coordinate plane cross-sections for the quadric surface given by the equation, sketch the surface itself, and give the name of the surface. (12.6)

(a) $x^2 - y = -z^2$