

Universidad Mariano Gálvez de Guatemala
Boca del Monte

Ingeniería en Sistemas. Ciclo II, "c"
Jornada Sábado.

ALGEBRA LÍNEAL

HENRRY WALDEMAR SONTAY CHAN



Nombre: Luis Fernando Lima Ixcuná
Carné: 7690-20-17409

I

$$\vec{v} = 3\vec{i} - 4\vec{j} - \vec{k}, \vec{u} = -4\vec{i} + 2\vec{j} + 4\vec{k}, \vec{w} = \vec{i} - 7\vec{j} + 6\vec{k}, \vec{v} = -4\vec{i} + 3\vec{j} - 5\vec{k}$$

Calcular

$$(3\vec{v} - 2\vec{u}) \cdot (5\vec{v} + 2\vec{w})$$

$$3\vec{v} = 3(-4, 2, 4) = (-12, 6, 12)$$

$$2\vec{u} = 2(-4, 3, -5) = (-8, 6, -10)$$

$$= (-12, 6, 12) - (-8, 6, -10)$$

$$= (-4, 0, 22)$$

$$5\vec{v} = 5(-4, 2, 4) = (-20, 10, 20)$$

$$2\vec{w} = 2(1, -7, 6) = (2, -14, 12)$$

$$5\vec{v} = (-20, 10, 20) = 2\vec{w} (2, -14, 12)$$

$$= (-20, 10, 20) + (-2, 14, -12)$$

$$= (-22, 24, 8)$$

$$= (-22)(8) + (24)(-12) + (8)(-17)$$

$$= (-176) + (-288) + (-136)$$

$$= -599$$

II $\vec{v} = 3\vec{i} + 5\vec{j}; \vec{u} = 6\vec{i} - 10\vec{j}$

$$= \vec{v} \cdot \vec{u} = (3, 5) \cdot (6, -10) = 18 + (-50)$$

$$= (3 \cdot 6) + (5 \cdot -10) = 18 - 50 = -32$$

$$= \vec{v} \cdot \vec{u} = (3, 5) \cdot (6, -10)$$

$$= a=3 \quad b=5 \quad \frac{3}{6} = \frac{5}{10} = \frac{1}{2}$$

$$= a=3 \quad b=-10$$

no paralelos

$$\text{III } \vec{A} = (2, 1) \vee \vec{B} = (6, 2)$$

$$\vec{U} \cdot \vec{A} = (x, y) \cdot (2, 1) = (2x, y) \vec{A}$$

$$\vec{U} \perp \vec{B} = x/6 = y/2 = (6x, 2y)$$

$$\text{IV A. } \vec{U} \cdot \vec{U} = (2)(-9) + (-3)(6)$$

$$= -18 + (-18) = -36$$

$$|\vec{U}| = \sqrt{9^2 + 6^2} = \sqrt{81 + 36} = \sqrt{117}$$

$$\frac{\vec{U} \cdot \vec{U}}{(-3)^2} = \frac{-36}{\sqrt{117}} = \frac{-36}{117} = \frac{9}{117} + \frac{6}{117}$$

$$\text{B. } \vec{U} \cdot \vec{U} = 9^2 - 6^2; \vec{U} = 9 + 1$$

$$(d + b) \cdot (1 + 1)$$

$$|\vec{U}| = \frac{\vec{U} \cdot \vec{U}}{\sqrt{(1)^2 + (1)^2}} = \frac{d + b}{\sqrt{2}} = \frac{d + b}{(\sqrt{2})^2} = \frac{d + b}{2}$$

$$\cdot (1 + 1)$$