**LATIHAN ANALISIS VEKTOR**

1. **Diketahui sebuah gaya :**$ F=\left(1,-5, 8\right)$

**Tentukanlah :**

1. **Vektor gaya**
2. **Nilai vektor gaya**
3. **Vektor satuan gaya**
4. **Nilai vektor satuan gaya**

**Jawab :**

**a. Vektor gaya** $\left(\vec{F}\right)$

$$\vec{F}=F\_{x}\hat{i}+F\_{y}\hat{j}+F\_{z}\hat{k} $$

$\vec{F}= $**..................................................................................................**

**b. nilai vektor gaya** $\left(\left|\vec{F}\right|\right)$

$$\left|\vec{F}\right|=\sqrt{F\_{x}^{2}+F\_{y}^{2}+F\_{z}^{2}}$$

$$\left|\vec{F}\right|=\sqrt{………………………………….}$$

$$\left|\vec{F}\right|=\sqrt{………………………………….}$$

$$\left|\vec{F}\right|=\sqrt{………………………………….}$$

**c. vektor satuan gaya** $\left(\hat{F}\right)$

$$\hat{F}=\frac{F\_{x}\hat{i}+F\_{y}\hat{j}+F\_{z}\hat{k} }{\sqrt{F\_{x}^{2}+F\_{y}^{2}+F\_{z}^{2}}}$$

$$\hat{F}=\frac{…………………….. }{\sqrt{…………………}}$$

**d. nilai vektor satuan gaya** $\left(\hat{F}\right)$

$$\left|\hat{F}\right|=\sqrt{\hat{F}\_{x}^{2}+\hat{F}\_{y}^{2}+\hat{F}\_{z}^{2}}$$

$$\left|\hat{F}\right|=\sqrt{………………………………….}$$

$$\left|\hat{F}\right|=\sqrt{………………………………….}$$

$$\left|\hat{F}\right|=\sqrt{………………………………….}$$

1. **Diketahui sebuah gaya :**$ F=\left(-4, 2,-5\right)$ **dan posisi :** $R=\left(2, 8,-3\right)$

**Tentukanlah :**

1. **Perkalian titik gaya dan posisi**
2. **Perkalian silang gaya dan posisi**

**Jawab :**

1. **Perkalian titik** $\left(\vec{F}.\vec{R}\right)$

$$\vec{F}.\vec{R}=\left(F\_{x}\hat{i}+F\_{y}\hat{j}+F\_{z}\hat{k}\right).\left(R\_{x}\hat{i}+R\_{y}\hat{j}+R\_{z}\hat{k}\right)$$

$$\vec{F}.\vec{R}=\left(……………………\right).\left(………………………….\right)$$

$$\vec{F}.\vec{R}= ……………………………………………….$$

$$\vec{F}.\vec{R}= ……………………………………………….$$

$$\vec{F}.\vec{R}= ……………………………………………….$$

1. **Perkalian silang** $\left(\vec{F}×\vec{R}\right)$

$$\vec{F}×\vec{R}=\left(F\_{x}\hat{i}+F\_{y}\hat{j}+F\_{z}\hat{k}\right)×\left(R\_{x}\hat{i}+R\_{y}\hat{j}+R\_{z}\hat{k}\right)$$

$$\vec{F}×\vec{R}=\left[\begin{matrix}\hat{i}&\hat{j}&\hat{k}\\F\_{x}&F\_{y}&F\_{z}\\R\_{x}&R\_{y}&R\_{z}\end{matrix}\right]$$

$$\vec{F}×\vec{R}=\left[\begin{matrix}&&\\&&\\&&\end{matrix}\right]$$

$$\vec{F}×\vec{R}=\left(…………\right)\hat{j}×\hat{k}+\left(.…………\right)\hat{i}×\hat{k}+\left(……………\right)\hat{i}×\hat{j} $$

$$\vec{F}×\vec{R}=\left(…………\right)…..+\left(.…………\right)……+\left(……………\right)……. $$

$$\vec{F}×\vec{R}=\left(…………\right)…..+\left(.…………\right)……+\left(……………\right)……. $$

$$\vec{F}×\vec{R}= ………………………………………………………………$$