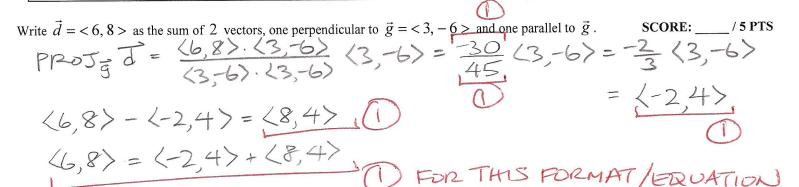
1	NIO	CATO	ULATORS	ATION	TED
	14()	LALL	ULAIUKS	ALLUN	

2. UNLESS OTHERWISE INSTRUCTED, SIMPLIFY ALL ANSWERS COMPLETELY

3. SHOW PROPER & CONCISE PRECALCULUS LEVEL WORK TO JUSTIFY YOUR ANSWERS



Let
$$\vec{s} = 2\sqrt{3}\vec{j} - 6\vec{i}$$
.

SCORE: _____ / 8 PTS

[a] Find a vector \vec{d} in the <u>opposite</u> direction as \vec{s} , such that $||\vec{d}|| = 5$. Write your answer in component form.

$$-\frac{5}{\|5\|} = -\frac{5}{\sqrt{2+36}} \langle -6, 2\sqrt{3} \rangle$$

$$= -\frac{5}{\sqrt{48}} \langle -6, 2\sqrt{3} \rangle$$

$$= -\frac{5}{\sqrt{43}} \langle -6, 2\sqrt{3} \rangle$$

$$= \frac{5\sqrt{3}}{2}, -\frac{5}{2} \rangle 0$$

[b] If \vec{p} is a vector with magnitude 6 which makes an angle of 135° with \vec{s} , find $\vec{s} \cdot \vec{p}$.

[c] Find the direction angle of \vec{s} .

$$\Theta_{\hat{S}} = \pi + \tan^{-1} \frac{2\sqrt{S}}{-6}$$

$$= \pi + \tan^{-1} (-\frac{1}{2}) = \pi - \frac{1}{6} = \frac{5\pi}{0}$$

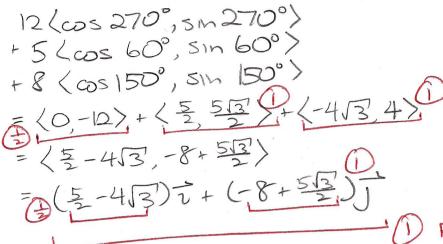
Three	forces	act on	an	object.

Force 1 has magnitude 12 newtons and direction angle 270°.

Force 2 has magnitude 5 newtons and direction angle 60° .

Force 3 has magnitude 8 newtons and direction angle 150°.

[a] Find the resultant of the three forces. Write your answer as a linear combination of \vec{i} and \vec{j} .



(USING Z, T)

[b] The resultant of the three forces acted on the object as it moved from (1, -4) to (-3, -2), where all coordinates are measured in meters. Find the work done, and give appropriate units for your answer.

$$\vec{d} = \langle -3-1, -2-4 \rangle = \langle -4, 2 \rangle$$

 $\langle \xi - 4/3, -8 + \frac{52}{2} \rangle \cdot \langle -4, 2 \rangle = -10 + 16/3 - 16 + 5/3$
 $\vec{D} = -26 + 21/3$, No or \vec{J} .

[FILL IN THE BLANKS]

DIF ALL CORPECT COORDINATES

DIF 2 CORRECT COORDINATES

SCORE: ____/7 PTS

SCORE: _____ / 8 PTS

- You start at the origin in 3D, and move 12 units down, 9 units forward, and 11 units left. You are now at the point with co-ordinates (9,-1), you are in octant X, and you are X units away from the XZ plane.
- [b] If $\vec{b} \cdot \vec{a} = -9$, then the angle between \vec{a} and \vec{b} is OBTUSE.



[c] The equation of the yz – trace of the sphere $(x+2)^2 + (y-3)^2 + (z-1)^2 = 19$ is $(y-3)^2 + (z-1)^2 = 15$

For the vectors shown below, sketch the vector $2\vec{w} - \frac{1}{2}\vec{p}$.

SCORE: ____/2 PTS

