

#Jenny



Finally I get this ebook, thanks for all these I can get now!

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Cool! I'am really happy

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My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

1.17c) Find a unit vector in the plane of the triangle and perpendicular to \mathbf{R}_{AX} :

$$\mathbf{a}_{AX} = \frac{(-10, 8, 15)}{\sqrt{309}} = (-0.337, 0.406, 0.741)$$

Then:

$$\mathbf{a}_{AY} \times \mathbf{a}_{AX} = (0.664, -0.379, 0.645) \times (-0.337, 0.406, 0.741) = (-0.559, -0.812, 0.677)$$

The vector in the opposite direction to this one is also a valid answer.

c) Find a unit vector in the plane of the triangle that bisects the interior angle at A : A non-unit vector in the required direction is $(\mathbf{R}_{AY} + \mathbf{R}_{AX})$, where

$$\mathbf{a}_{AY} = \frac{(28, 18, -30)}{\sqrt{2018 - 180}} = (0.607, 0.627, -0.348)$$

Now

$$\frac{1}{2}(\mathbf{a}_{AY} + \mathbf{a}_{AX}) = \frac{1}{2}(0.607, 0.627, -0.348) + (-0.337, 0.406, 0.741) = (0.095, 0.514, 0.397)$$

Finally:

$$\mathbf{a}_{u} = \frac{(0.095, 0.514, 0.397)}{\sqrt{0.095^2 + 0.514^2 + 0.397^2}} = (0.168, 0.915, 0.367)$$

1.18. Transform the vector field $\mathbf{H} = (A/\rho)\mathbf{a}_\phi$, where A is a constant, from cylindrical coordinates to spherical coordinates.

First, the unit vector does not change, since \mathbf{a}_ϕ is common to both coordinate systems. We only need to express the cylindrical radius, ρ , as $\rho = r \sin \theta$, obtaining

$$\mathbf{H}(r, \theta) = \frac{A}{r \sin \theta} \mathbf{a}_\phi$$

1.19. a) Express the field $\mathbf{D} = (r^2 + \rho^2)^{-1/2}(\sin \theta \mathbf{a}_r + \sin \theta \mathbf{a}_\theta)$ in cylindrical components and cylindrical variables. Here $x = \rho \cos \phi$, $y = \rho \sin \phi$, and $z^2 + \rho^2 = r^2$. Therefore

$$\mathbf{D} = \frac{1}{\rho} (\cos \theta \mathbf{a}_\rho + \sin \theta \mathbf{a}_\theta)$$

Then

$$D_\rho = \mathbf{D} \cdot \mathbf{a}_\rho = \frac{1}{\rho} [\cos \theta (\mathbf{a}_\rho \cdot \mathbf{a}_\rho) + \sin \theta (\mathbf{a}_\theta \cdot \mathbf{a}_\rho)] = \frac{1}{\rho} [\cos^2 \theta + \sin^2 \theta] = \frac{1}{\rho}$$

and

$$D_\theta = \mathbf{D} \cdot \mathbf{a}_\theta = \frac{1}{\rho} [\cos \theta (\mathbf{a}_\rho \cdot \mathbf{a}_\theta) + \sin \theta (\mathbf{a}_\theta \cdot \mathbf{a}_\theta)] = \frac{1}{\rho} [\cos \theta (-\sin \theta) + \sin \theta \cos \theta] = 0$$

Therefore

$$\mathbf{D} = \frac{1}{\rho} \mathbf{a}_\rho$$

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