

I'm going to visit a plasmatics that I. I'm very happy to be part of this. He believes there are a few lectures I'm going to teach you the vectors. The second point is what you come across in your physics. Another side of things like *****. Just think of quantities like the creature mass. Distance city they're all having own nature, but there are other physical quantities like. And displacement. Electromagnetic force, velocity, acceleration different region. We are calling the first set up quantities like density distance, all that are specified by only Indian number if they are known as scalars, whereas the other setup quantities like electromagnetic force, velocity, acceleration, displacement. Not only by the magnitude but also the action in which it is active. OK, So in this lecture I'm going to teach you how to. What I mean by that is. The videos are scalars and how how to do the algebra for their vendors. We will see and then everything that select my additional thickness multiplication of vectors. Scalar multiplication of vectors. All that we will see and then as applications we will see.

So some problems, phenomenally, geometry and So on. Find out what we would need. The English, So some figures, like for example, for instance, I'll take some simple objects like straight lines and the planes, how to represent them in the vector form. OK, now let me just say produce one vector means and then we will see the properties of the vectors. So as I said earlier. Let us let us. I didn't know that. Directors. So here we have a. But it's up for this. This is measured by the number. What is the velocity? Is specified by the by the magnitude as well as the direction. So the mother from what is the? So we know that there is significance mathematically, So mathematical description of it. How to represent a vector? So I said we're gonna smoke. So that's what we can understand mathematically. Yeah. That's a legacy. Like the link of the placement. For example, when you call that line segment AB, the length of the line segment is. For example, I write. I doubt you. I'm saying that this is the direction of that. I'm calling this the direction. So that's the vector. So we call this point as the initial point point A and then the point B is called the terminal point. Also, sometimes we call it. This is the end of the vector. This is the end of the. Therefore. So. Mathematically. It is a directed line. So that is the definition of a question. It's Alice, it's a Direct Line segment. So what we did we generally we write that vector as vector. So that means that it starts from the point A to the point B. That it is simply. In short, it is. OK, and this modulus of AB. It's called the magnitude. The magnitude of the magnitude. For example. People. OK, So that is our object. My name is. Play of course. I don't know English, let's say. 50 degrees to the horizontal. OK, this is the force. The physical force is acting pulling the object. With a 50 degree. Can be represented by the same direction mathematically. So let's say the force is measured. You know that in physics is, let's say, 5. The same data. Was added to that. And whose unit in the magnitude is by units. So this is we have to send this course mathematically like this. It's starting from here. So this is this is the daylight there. This is the. Hit up the victim. So this will be the person. No. What do you mean by equal vector? Look this up. Leaving. CD. So you'll be and CD are equal equal to equal to C. You should be better, and the ABA model is a BBB. That might be because of the speed limit and also there. Maybe it's in the same direction, maybe? So the same thing. I introduced another motion called opposite vectors. The two requests are called. Opposite to each other, they have the same magnitude. Suppose this is the direction. I. Same direction. Like in the opposite direction. ABCD have the same attitude, but the direction opposite So I can call that vector. In the same. Opposite the Internet. Remember, this is an important, but whenever we. But there is. Basically it is specified only by its. Trying to do that. Not by it's location. Actually this is gonna be three days a week. That's better. So. So. Totally by the magnitude and the direction of that. If you might produce So another new notions like modulus of a. Is equal to 1. Then the vector is called unique. Is equal to θ . It's called θ . Addition increase. There is So that addition. There are things that are added. In a particular way. OK, we know that

each of the numbers so, but directors are added in a particular way. Notice that. Let us see this now.

So it's saying that these are the two vectors. Yeah, let's see. This is the party and this is the game. I call this. And there is another victim for convenience. Things like this.

So we see. And then we call these papers. Just like this, you can just imagine like this. An object is moving from the point A to point B and going from B to C. Great this direction. This direction and then from BTC in this direction. In that space that is, there is to see. Actually it is going from here to see what are the file and it is out of this

So it is equal and pull the displacement is equivalent to. You need to see that.

So I call this doctor.

So probably need to see is equal to the probability.

So therefore this is the last. There it is. Like that really plus. PC. Is equal to the victories,

So this is out of the system. I will explain this in a better way. What's the? It's a given. Let's see it. What can I say this? No, I'm doing that issue like this. I don't what we do is to. I said earlier. The location of the vector doesn't matter actually display. We take this. By the. End of the the end of the second, because this is my second. At the end of the. Just like that, you keep the. The payment of the second one. The triangle law. Which is simply this. Surplus.

So this is how to do the some important properties that immediate properties you will see always say. The number. 3. Some music. But it's the same, but the same vector. Suppose if I have the P. Maybe the kids. That this may be. And then I'm adding.

So as I said, they give the. Of the second winter. Does the suspect? That's the difference as well.

So therefore here plus B is equal to. The people seem so. We say it is accounted for.

Tradition is. High #2 see like this ABC we have. But that is. Plus 13 + C. First, we are adding the PNC and then we are adding with. It is famous. Like that? Victory.

So this property is called the association. There's no other property. That's a big three vectors, CBC.

So we will see. Save us to create the speakers that we are adding the P and then that is.

So this is called an associative property. For adding. Same as. For example. We have a vector subtraction. Printers. Take the victory and so. Like that? 1.38 plus opposite. We know what minus space,

So therefore the sum of all this along with this. The victim minus B. You said that. The subtraction of going to see anything, but it's, but it's. That is a victory. And then let's say this is going to be. No, the like that

So you can see how the vector is there. Reading with the living. This is the. Disappointment.

So with the plus with the minus minus,

So this is a this is a. This is the initial for. This is the point. Now this is actually this is your. And then minus B will be in the office inside.

So this is the minus means.

So this is the feeling that I know where we are adding this victory, and

So therefore by the prior the the the. 16 CC. Easy this will be but.

So this is the subtraction. And you know the multiplication. But this is another operation. He is ineffective. Easy. And then the key thing here. Good time see KK is a scalar here. K is a scalar. They can be negative or positive. Greater than one,

So create is always is another vector. Is that an effective? In the same direction. In the same direction as C. But things like that.

So this is the. OK, thanks longer than you. And if it would be the opposite direction, if K is positive, it is staying the same that if we give. Is possible. If there is negative. You will have the opposite direction, but it takes longer than you, but gaining their care is affected in the. This is the opposite direction. But it takes longer. Then the. With the opposite.

So this is what the qualification based here and once I introduced this particular edition and the multiplication we have this distributive properties let us let me just do it as a load. Really easy to live by,

So here, here, here and here we are. Imagine you and me and then multiply this with the same as a. It takes.

So this is a. This is for the distributive property.

So and similarly this there is another distributive property. Suppose L is another K plus. The game Brazil.

So precious. L type. Literally there is other missing activity with the multiplication that is K . Seamless the. There is also same as yes.

So obvious properties. And with this, let me make the reason we recall the. Do you think that? A body equal to 1 is called a unit. These then we tested positive 35 divided divide that. Quantified by. Maggie there is a limit. If we can. If I divide by then we get the uniqueness of this the same direction of. Quickly. In the direction of. Anyway, that is doing. You'll get the unit vector in that direction. What we do is we simply that divide by the length of the

So that gives us. No need to see some problems based on whatever we have done. The whole tradition of multiplication. Let us see though. What is the sum of? Let's see. She would just see me. That means that for the perspective, the terminal quality same as the initial part of the 2nd. Let's see. What will be there? What is the what is a B plus BC here $B + C$ is. The victory. Directories. By the definition of the tradition, you can proceed. Maybe this PC is equal to the decreasing and therefore now coming to this problem

So the the test set becomes ACC . Is this the opposite direction of the vector? Is that one is becomes? Both in the same direction, but have the both the opposite direction but the same same magnitude. That is. Find the sides of the, for instance, some polygons. Let's take some with six sides. Get a small. Consider it. They got sick. Would say So let us you know the vertices BCD , yeah?

So 6 vertices. Team no.

So let me draw the figure like this.

So this is this is also. When I say let me take. All sides are equal. All things are equal. Each other. Activity. The. 2nd. What do you mean? Something that he would? Let us call this this CD . Little bit also it's very important. No, let me call. Because the problem is this, it is given maybe is the victory. This is the victory. This is a little bit longer. The magnitude of A and the magnitude of the vector B was safe. But the dimensions are different, therefore the victory by giving the PCR different vectors. Select the printer PC . That being said. Smaller. No, it was this thing. The other four sides in terms of. Play the other things. In terms of. Like this?

So you this is

So good. Like this?

So maybe. This is this one. And then, like the triangle for limited edition, the AC is. This is where this is being. That means that this is. The easiest. By addition. Is looking good. No, I am looking at the. The property of electricity. However, if I look at the CD . For the regular example, the movie easier parallel. $DLBCL$ panel are not only that the E equal to twice. The 80 is equal to two times.

So I don't even put the aroma here because I'm just mentioning only the. Eating. I guess the property of.

So with this, if I. Because.

So if you look at the. No, this is what we want to fight now I'm looking at the scene in the winter season. CD some love. Because I can see it. It's a summer. See. You know what he sees, see. What is CCC plus B ? Therefore, C is minus $1 + b$. And 80 . Yes it is. That is another thing that is bad. It is bad. 80 is equal to four times. Always telling everyone. Wait?

So this is what? CD 's. No. Like the noted as strange. DE D is equal to. Battered by the same property as the exception is the BA for the directions are opposite. Therefore it is minus. Similarly here. You spell it. BC . But the opposite. That could be. The. Please the city therefore decided with the opposite directions. By yourself. Cities that we made. These are the sites of the say remember the cancer equal. Next week. Population. There there are three printers. Let's call the CBC . Let's say that this you know. Please speak like this. See. Everything. What is the? What is? Mike is equal to. The address.

So therefore this is.

So this is interesting. I don't know why I'm adding this here plus $B \& C$. The previous there are three. Clearly. He's a son of. Easy. See. That we have to be respected.

So this is the website of that. Most. You're just sick like that. Easy. Thank you. This. So let us start the new topic. Everything. This will help us handle the windows in the easier way. The medium is quite good. That is. Like this? Better than the coordinate

system,

So this is my first the direction of its axis. The way access. This is the. If you have anything like that. Coordinate system. Boys and boys nativity the unit. Plus, you don't actually exist. Boy, it's this. That way. Yeah, I use this. I use all the units. Campfire like the simple letter similarly. It's still the playlist. It would be. Hello boys. Similarly. Hello. We don't have this. This is just like this. Alright. Considering this. Like this stuff quality. I'm considering this. This would be the beginning. This. This is hard. Is equal to. Would be. I just I like that. Things like that this is. This would be easy. Just be tasty. Those killers. This is

So far, which is nothing but that. To be honest, is equal to the length by the disease. I know they call. Peace. That was the point. OK, I mean. That the position that you. From that point. Have you been? You will take any help Ed. Obviously. P is equal.

So this will be the. His wife. The same thing, actually. Which is also.

So sorry, because there's nothing like this. This is axis. Take any might be which I call ABC. And then, like. Very few. You know, if I. We know that this is this is only. So. Therefore, This is why this is exercise is very easy. It's. And. This is the this. This like this. This is your. This is your view. That this is a. It is. That's pretty much presented. Automatically now you see this. Is equal to. Weather condition deep.

So this gives us what is right this is. Everybody knows that might be pretty Sunday. Because you're increasing the universe. Leadership. Is that the unit vector? How about this? Poisoned.

So either I can. Convenience that he is. And therefore it is see tapes. This one looks like. The service really frustrated with seeking,

So we say that. Please leave the speaking person seeking. Just take this exactly will understand that. It's different. You can see the three points that is taking it to be.

The state party doesn't want 1433800. Sweet. By the light.

So it wasn't. No. See. DP is equal. What is it? Say these are the points and remember the point. Let's say this is the other. This is the question.

So this minus 114 is the safest plus 4. Can you please? This is a. That's it. Be with them. That would be it would be. This is queen. But this is. Easy. The boys you know the way. And we know the movie, which is the position of the point B. This is. The other components have 0. Equal to simply. AB is equal to Oculus. Right there. We'll be waiting for you. We are people. There would be minus. This. Party. I just saved the day. You know that this. The bike. And the position right there.

So if I write. With the position. Working

So those are the impression therefore it is. Let's take this book. So. What's the increase the coordinate system? You know? Some of this, some of the squares. Because. Definition is $C - 4$.

So we see what? Just like this is the opposite. Minus the question which is.

So that's minus two $J + 3$. No. With this there is. Take this. Let us see that. Getting the space. ABC. Phase three points. Space. Does this. First position vectors, let's say two $I - J + K$. Basically this treaty minus 5. By the school. So. Miller what do you mean by that is? IS $3 - 3$ according to $CF3 - 4$ minus. PNC BBC what's this?

So far. The several. He says disabled. The other side. But he said the embargo. See is what.

So now let us thinking. By the. Then we get out.

So this is the. There's no way this is the other thing,

So it won't be the question like that, you know. Will be made this week. Will give you that quickly. Is equal to. The only way the system this is the thing, but maybe not right away would be minus. Well, yeah. This is equal. I have three days by three. Boy

So this is. This. I just put it. By the 16th similarly I. That you see is equal to. That's. See. Select the brightness. Now what is the App Store? It might be that. Spider this one plus. $1 + 4 + 36$. What you call similarly with the PC square. Is equal to $4 + 4 + 4$ is equal to 6. This weather is it plus $8 + 45$ which is equal to five obviously. Now by looking at this. What we are saying is. Baby spread. Physical or PC squad. Smart series. Exactly the same thing. What's the deal?

So this is the right angle that is. Would you play me stop putting the first lecture?

So what happened please? The mathematical description and then how do the addition, subtraction and scare multiplication of like this? And also next we have seen some problems based on that. Finally I need to increasing the coordinates system. We are representing the vector. Easier. Introducing an ocean called. Once we are able to, you

know the way that we can find any with that and then we can find the only with that we have seen some problems based on. Thank you. Doing fine.

So for this time, the next class we will do something on how to find the points suppose. Anybody anybody? Exactly, I don't. Play the party in between the. What is the coordinates of the point? Dividing the given line in a given ratio, let's say. And then we will see how to find the equation of this line. And then we introduce the very important question. Product we have four types of product. Just something different from this years. We have only one product. Take 2 enter cell, then we. Take a product that gives them scatter. We call that scalar product and then we while we have another type of product. The product that you said. And what is the geometric meaning of all that? And seeing that? Thank you, thanks.

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