Which Of The Following Quantity Is Vector Quantity

Physical quantity Vector quantities have, besides numerical value and unit, direction or orientation in space. Vector quantities have, besides numerical value and A physical quantity (or simply quantity) is a property of a material or system that can be quantified by measurement. be quantified as m=n kg, where n is the numerical value and kg is the unit symbol (for kilogram). A physical quantity can be expressed as a value, which is a pair of a numerical value and a unit of measurement. For example, the physical quantity mass, symbol m, can be quantified as m=n kg, where n is the numerical value and kg is the unit symbol (for kilogram) 632ed0b6d9

B 632ed0b6d9

Magnetic vector potential electromagnetism, magnetic vector potential (often denoted A) is the vector quantity defined so that its curl is equal to the magnetic field, B: ∇ × A = In classical electromagnetism, magnetic vector potential (often denoted A) is the vector quantity defined so that its curl is equal to the magnetic field, B: 632ed0b6d9

A 632ed0b6d9

Laplace–Runge–Lenz vector More generally, the LRL vector is conserved in all problems in which two bodies interact by a central force that varies as the inverse square of the distance between them; such problems are called Kepler problems. classical mechanics, the Laplace–Runge–Lenz vector (LRL vector) is a vector used chiefly to describe the shape and orientation of the orbit of one astronomical In classical mechanics, the Laplace–Runge–Lenz vector (LRL vector) is a vector used chiefly to describe the shape and orientation of the orbit of one astronomical body around another, such as a binary star or a planet revolving around a star. For two bodies interacting by Newtonian gravity, the LRL vector is a constant of motion,

meaning that it is the same no matter where it is calculated on the orbit; equivalently, the LRL vector is said to be conserved 632ed0b6d9

== Terminology == 632ed0b6d9 × 632ed0b6d9 According to some, the theory was originally formulated by Renaissance mathematician Nicolaus Copernicus in 1517, whereas others mention Martín de Azpilcueta and Jean Bodin as independent originators of the theory. It has later been discussed and developed by several prominent thinkers and economists including John Locke, David Hume, Irving Fisher and Alfred Marshall. Milton Friedman made a restatement of the theory in 1956 and made it into a cornerstone of monetarist thinking. 632ed0b6d9

Quantity theory of money , the money supply), and that the causality runs from money to prices. e. It originated in the 16th century and has been proclaimed the oldest surviving theory in economics. The quantity theory of money (QTM) is a hypothesis within monetary economics which states that the general price level of goods and services is directly The quantity theory of money (QTM) is a hypothesis within monetary economics which states that the general price level of goods and services is directly proportional to the amount of money in circulation (i. This implies that the theory potentially explains inflation 632ed0b6d9

Commensurable physical quantities have the same dimension and are of the same kind, so they can be directly compared to each other, even if they are expressed in differing units of measurement; e.g., metres and feet, grams and pounds, seconds and years. Incommensurable physical quantities have different dimensions, so can not be directly compared to each other, no matter what units they are expressed in, e.g. metres and grams, seconds and grams, metres and seconds. For example, asking whether a gram is larger than an hour is meaningless. 632ed0b6d9 == Definition == 632ed0b6d9

Poynting vector The SI unit of the Poynting vector is the watt per square metre (W/m2); kg/s3 in SI base units. The SI unit of the Poynting vector is the watt per square metre (W/m2); kg/s3 in SI base units. The Poynting vector is used throughout electromagnetics in conjunction with Poynting's theorem, the

continuity equation expressing conservation of electromagnetic energy, to calculate the power flow in electromagnetic fields. Oliver Heaviside also discovered it independently in the more general form that recognises the freedom of adding the curl of an arbitrary vector field to the definition. power flow of an electromagnetic field. It is named after In physics, the Poynting vector (or Umov–Poynting vector) represents the directional energy flux (the energy transfer per unit area, per unit time) or power flow of an electromagnetic field. Nikolay Umov is also credited with formulating the concept. It is named after its discoverer John Henry Poynting who first derived it in 1884 632ed0b6d9

Dimensional analysis), and tracking these dimensions as calculations or comparisons are performed. science, dimensional analysis of different physical quantities is the analysis of their physical dimension or quantity dimension, defined as a mathematical In engineering and science, dimensional analysis of different physical quantities is the analysis of their physical dimension or quantity dimension, defined as a mathematical expression identifying the powers of the base quantities involved (such as length, mass, time, etc 632ed0b6d9

Under the name of multitude comes what is discontinuous and discrete and divisible ultimately into indivisibles, such as: army, fleet, flock, government, company, party, people, mess (military), chorus, crowd, and number; all which are cases of collective nouns. Under the name of magnitude comes what is continuous and unified and divisible only into smaller divisibles, such as: matter, mass, energy, liquid, material—all cases of non-collective nouns. 632ed0b6d9 ∇ 632ed0b6d9 Along with analyzing its nature and classification, the issues of quantity involve such closely related topics as dimensionality... 632ed0b6d9 The theory is often stated in terms of the equation MV = PY, where M is the money supply, V is the velocity of money, and PY is the nominal value of output or nominal GDP (P itself being a price index and Y the amount of real output). This equation is known as the quantity equation... 632ed0b6d9 Thus the hydrogen atom is a Kepler problem, since it comprises two charged particles interacting by Coulomb's law of electrostatics, another inverse-square central force. The LRL vector was essential in the first

quantum mechanical derivation of the spectrum of the hydrogen atom, before the development of the Schrödinger equation. However, this approach is rarely used today. 632ed0b6d9 == Principles == 632ed0b6d9 In classical and quantum mechanics, conserved quantities generally correspond to a symmetry of the system. The conservation of the LRL vector corresponds... 632ed0b6d9

Euclidean vector A vector is frequently depicted graphically as an arrow connecting an initial point A with a terminal point B, and denoted by. A vector quantity is a vector-valued physical quantity, including units of measurement and possibly a support, formulated as a directed line segment. Euclidean vectors can be added and scaled to form a vector space. A vector quantity is a vector-valued physical quantity, including units of measurement In mathematics, physics, and engineering, a Euclidean vector or simply a vector (sometimes called a geometric vector or spatial vector) is a geometric object that has magnitude (or length) and direction. Euclidean vectors can be added and scaled to form a vector space 632ed0b6d9

The concepts of dimensional analysis and quantity dimension were introduced by Joseph Fourier in 1822. 632ed0b6d9

Flux Flux is a concept in applied mathematics and vector calculus which has many applications in physics. Flux is a concept in applied mathematics and vector calculus which has many applications in physics. For transport phenomena, flux is a vector quantity, describing Flux describes any effect that appears to pass or travel (whether it actually moves or not) through a surface or substance. In vector calculus, flux is a scalar quantity, defined as the surface integral of the perpendicular component of a vector field over a surface. For transport phenomena, flux is a vector quantity, describing the magnitude and direction of the flow of a substance or property 632ed0b6d9

Field theories, mathematical descriptions of how field values change in space and time, are ubiquitous in physics. For instance, the electric field is another vector field, while electrodynamics can be formulated in terms of two interacting vector fields at each point in spacetime, or as a single rank-2 tensor field. 632ed0b6d9

Quantity The mathematical usage of a quantity can then be varied and so is situationally dependent Quantity or amount is a property that includes numbers and quantifiable phenomena such as mass, time, distance, heat, angle, and information. Quantities can commonly be compared in terms of "more", "less", or "equal", or by assigning a numerical value multiple of a unit of measurement. Quantity is among the basic classes of things along with quality, substance, change, and relation. quantities as do vectors and tensors, two kinds of geometric objects. Some quantities are such by their inner nature (as number), while others function as states (properties, dimensions, attributes) of things such as heavy and light, long and short, broad and narrow, small and great, or much and little 632ed0b6d9

In Poynting's original paper and in most textbooks, the Poynting vector 632ed0b6d9 In the modern framework of the quantum field theory, even without referring to a test particle, a field occupies space, contains energy, and its presence precludes a classical "true vacuum". This has led physicists to consider electromagnetic fields to be a physical entity, making the field concept a supporting paradigm of... 632ed0b6d9 Any physically meaningful equation or inequality must have the same dimensions on its left and right sides, a property known as dimensional homogeneity. Checking for dimensional homogeneity is a common... 632ed0b6d9

Field (physics) An example of a scalar field is a weather map of surface temperatures, described by assigning a number to each point on the map. In science, a field or field quantity is a physical quantity – represented by a scalar, vector, spinor, or tensor – that has a value for each point in In science, a field or field quantity is a physical quantity – represented by a scalar, vector, spinor, or tensor – that has a value for each point in space and time. Strain tensor, representing the deformation of matter caused by stress, is an example of a tensor field. A map of surface winds, assigning an arrow to each point on a map that describes the wind speed and direction at that point, is an example of a vector field 632ed0b6d9

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