



TSM Resources
for use with
Autograph 5

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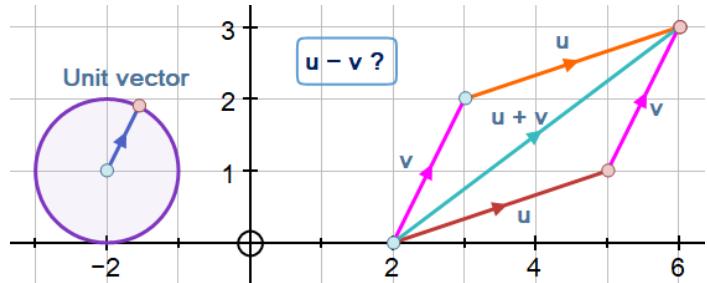
Mathematics A level: Autograph for teaching VECTORS

VECTORS: IN 2D AND 3D

Modulus, magnitude, direction
Position vector, unit vector

Equal vectors, parallel vectors, collinear.
Add and subtract vectors; multiply by a scalar

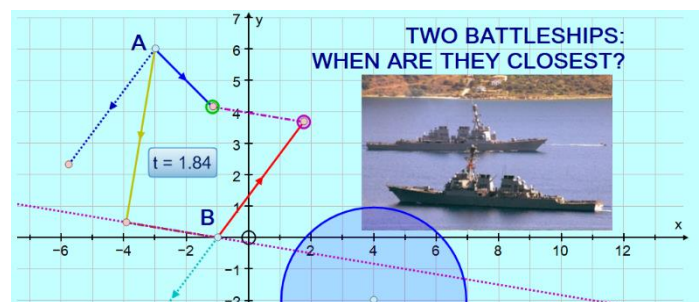
Express a vector as a combination of others.



RELATIVE VELOCITY

MECHANICS

A set of forces in equilibrium sum to zero.



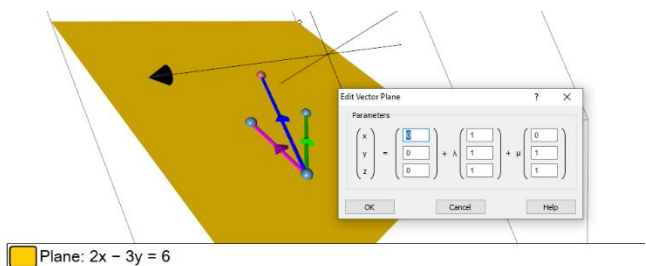
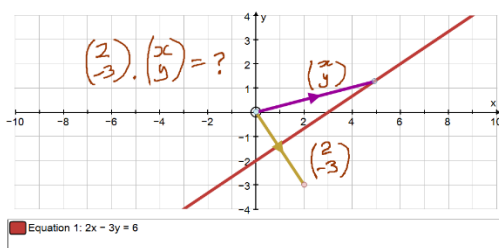
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Further Maths A level: Autograph for teaching VECTORS

SCALAR PRODUCT:

2D: the vector equation of a line

3D: the equation of a plane



VECTOR PRODUCT:

Line of intersection of two planes.

Angle between two planes

Vector form of eqn of a straight line in 3D

Angle between two non-perpendicular lines

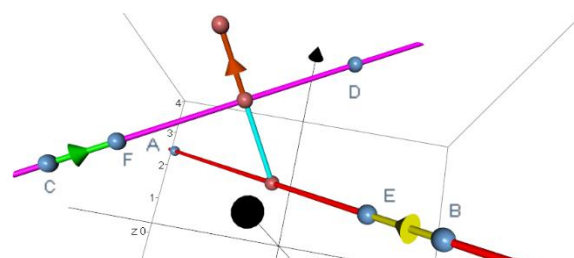
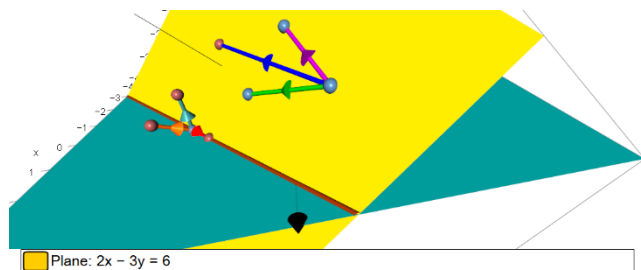
Shortest distance between two skew lines.

Intersection of two lines.

Intersection of a line and a plane.

Distance from a point to a line

Distance from a point to a plane





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Mathematics A level: Autograph for teaching PROBABILITY AND STATISTICS

Population and sampling

Discrete and continuous data

Grouped data, raw data

Dot plot; Box plot

HISTOGRAM; unequal classes; frequ. density

BIVARIATE DATA: correlation, regression line
Measures of spread; sample variance; Outliers
Rank correlation coefficient

BINOMIAL DISTRIBUTION; mean = np
Discrete uniform distribution.

NORMAL DISTRIBUTION

Linear transformation of a Normal variable

Null hypothesis, alternative hypothesis.

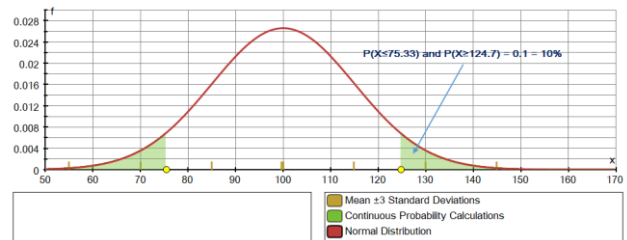
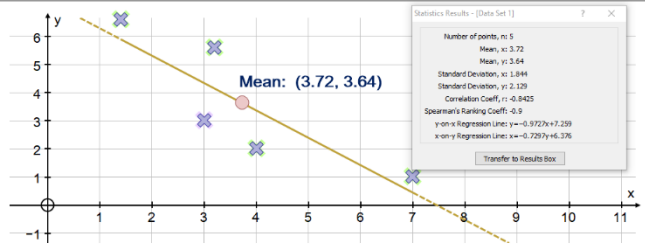
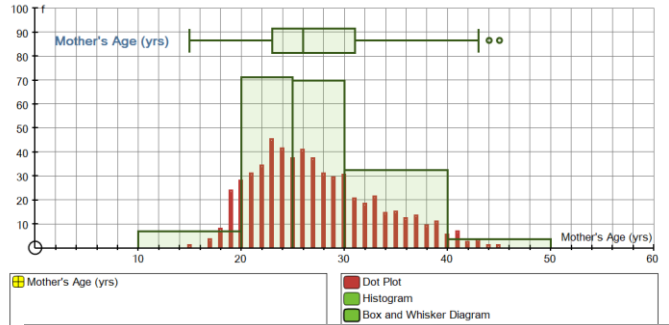
Significance level, 1-tail test, 2-tail test.

Critical value, critical region (rejection region)

SAMPLING

Random samples of size n from $X \rightarrow N(\mu, \sigma^2)$
have the sample mean $N(\mu, \sigma^2/n)$

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Further Maths A level: Autograph for teaching PROBABILITY AND STATISTICS

BIVARIATE DATA; Residuals;

Pearson's product moment correlation coef.

Spearman's rank correlation coefficient

Least Squares Regression lines

Both pass through (\bar{x}, \bar{y})

DISCRETE DISTRIBUTIONS

Uniform distribution

Poisson distribution

Rectangular distribution

HYPOTHESIS TESTS: Type I, Type II errors

Central Limit theorem

Confidence interval for Normal pop. mean

