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2022

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PASS is an acronym for Private Academic & Scientific Studies Limited, which was first established in 1980, it is registered in the United Kingdom and managed by Anthony Nicolaides ever since.

Company

PASS Publications first published academic books in 1990.

The founder and author Anthony Nicolaides was a full time teacher in Further Education. For thirty-five years he taught GCSE Mathematics, GCE (General Certificate of Education) Ordinary and Advanced Level Mathematics, Electrical and Electronic Principles, Electronics at all levels including CEI (Council of Electrical Institution) part II. He specialized in Semiconductor theory and particularly admired the inventor of the transistor, William Shockley who he met in 1972 at the 25-year anniversary of the invention of the transistor.

In 1996 the Principal of his College, Dame Ruth Silver, recognised Anthony's flair in teaching and course organising and bestowed the award of excellence to him.

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The Founder & Author's Biography

Anthony Nicolaides was born in Alexandria Egypt, Graduated from The Greek Grammar School with fifteen



'O' Level subjects. He came to London to obtain O Levels in English Language and Chemistry, A Levels in Pure Mathematics, Applied Mathematics and Physics which were then required to enter University of London from where he obtained his First Degree in Electrical and Electronic Engineering.

His first job was in Electrical Engineering, but soon he discovered his talent in teaching and he is teaching mathematics ever since.

He was a Full-Time lecturer for 32 years at LEWISHAM

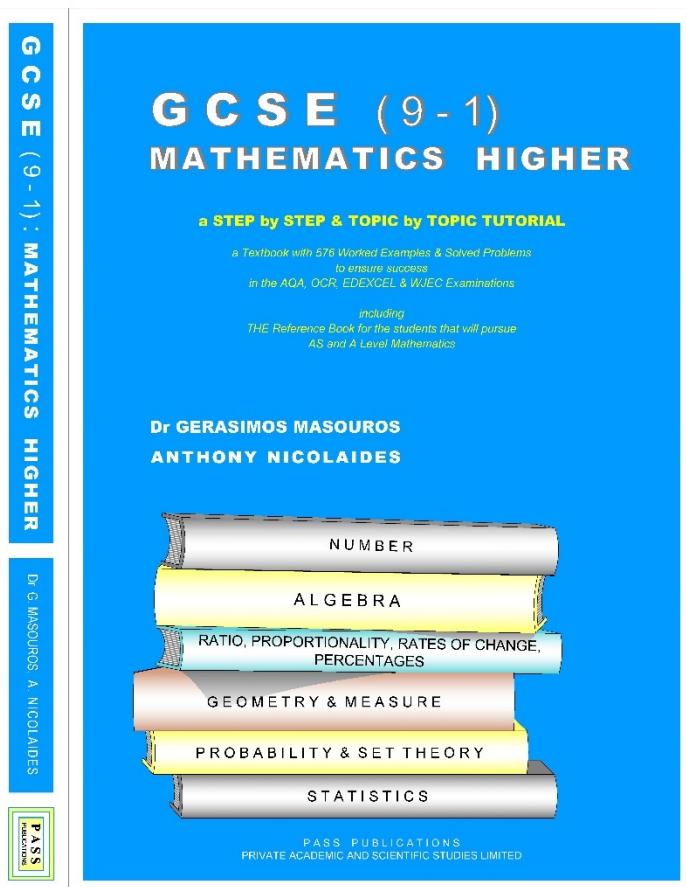
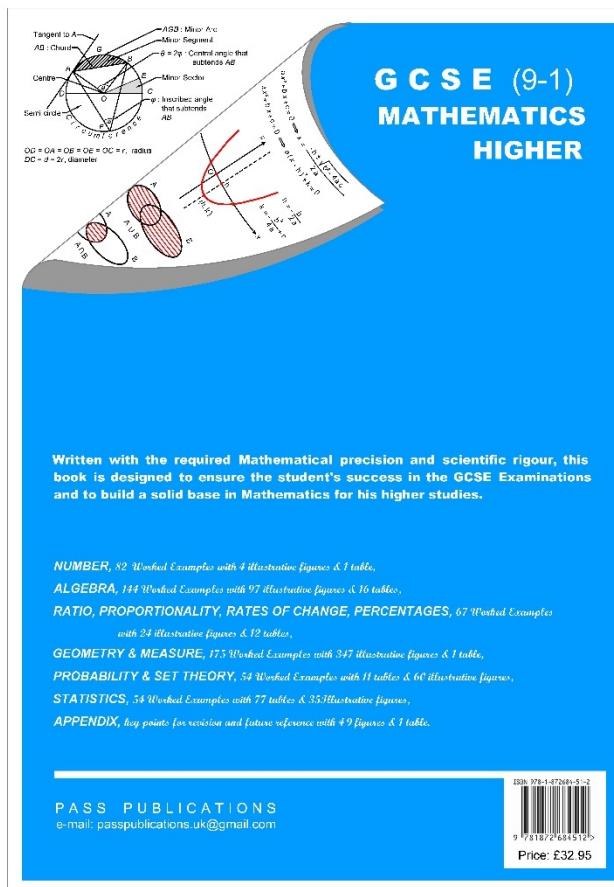
COLLEGE, a Grade 1 College at the time, when he was a COURSE TUTOR for over 12 years for the BTEC NATIONAL DIPLOMA IN ENGINEERING.

Hundreds of his students obtained First Degrees from Universities.

The most outstanding student, Anthony Robertson, obtained First Class Degree from Manchester University.

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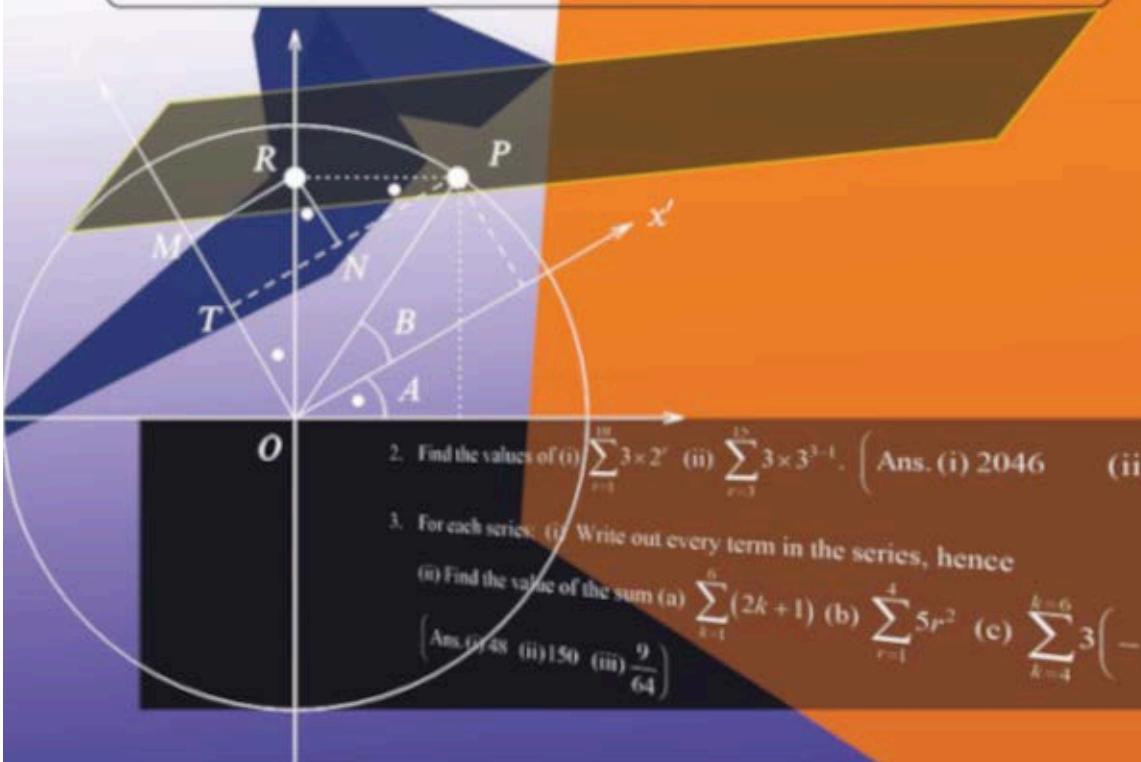
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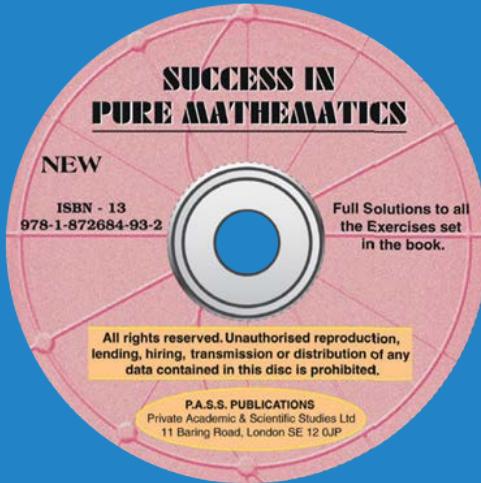
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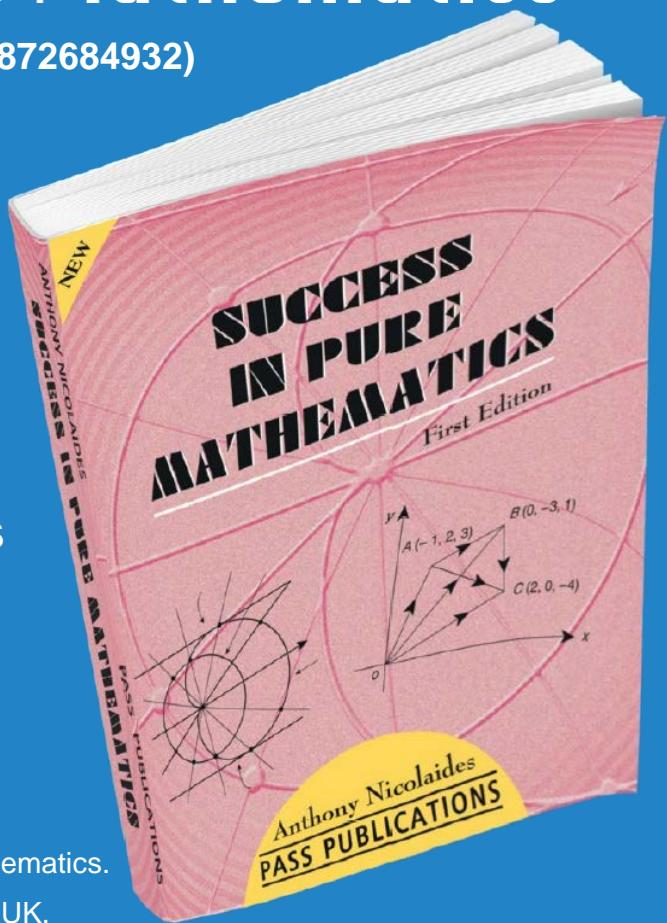
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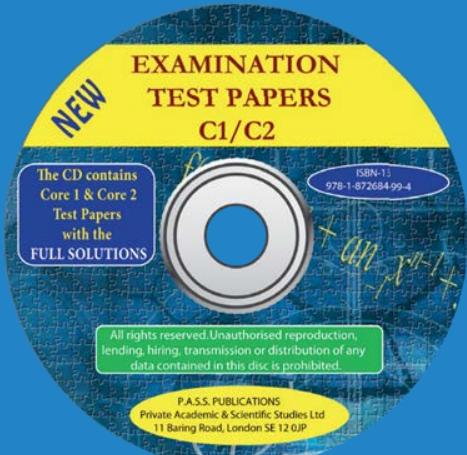
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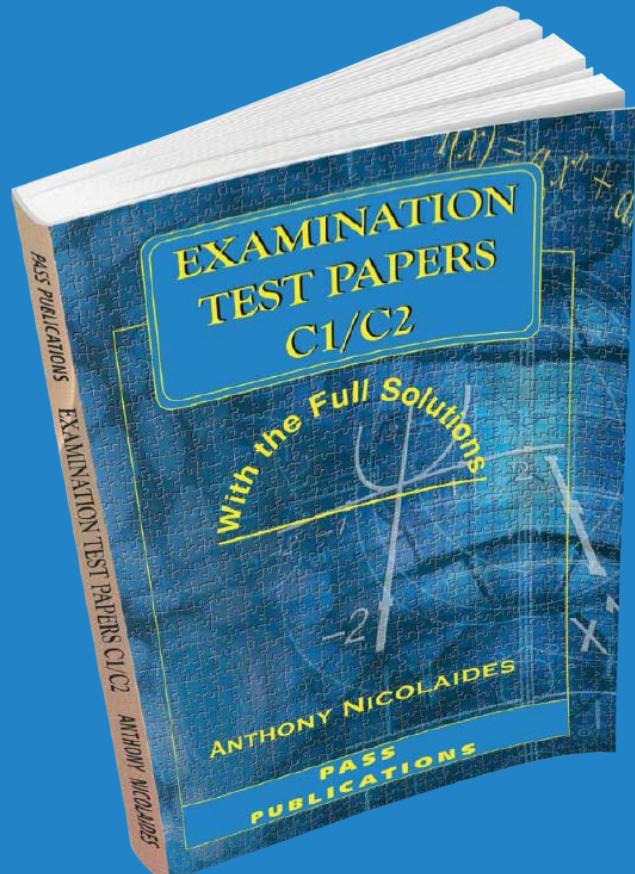
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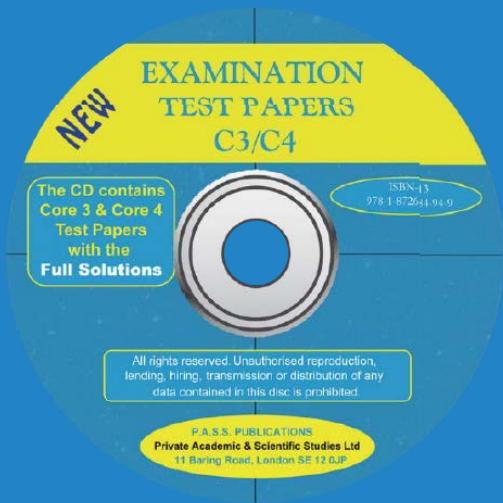
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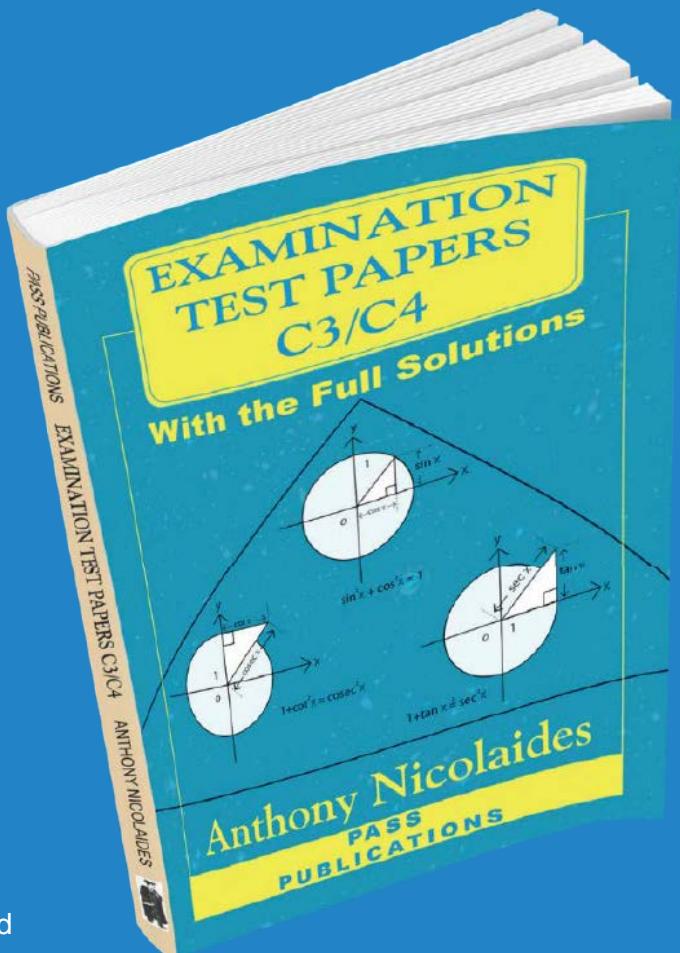
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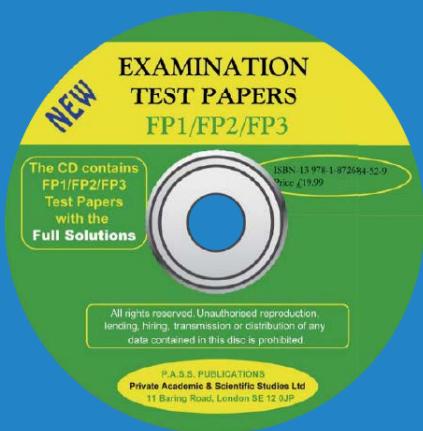
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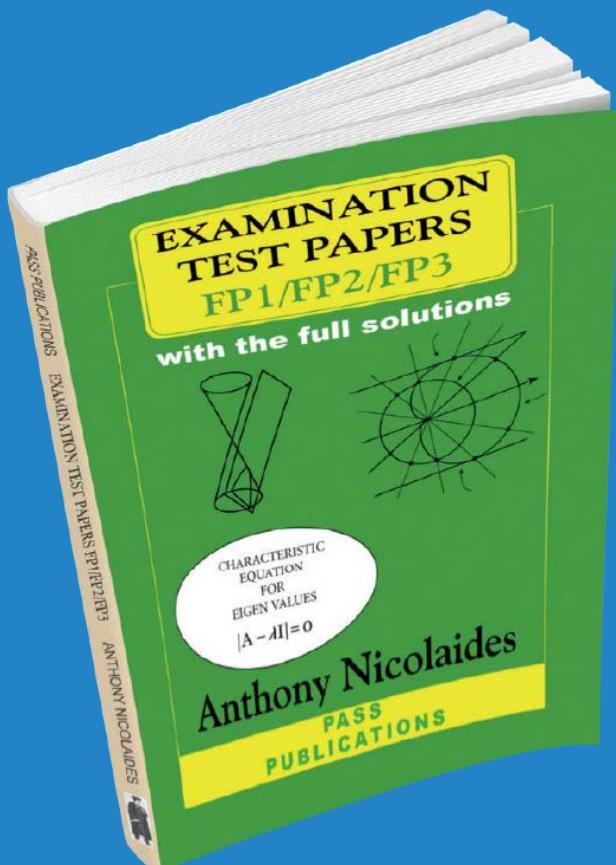
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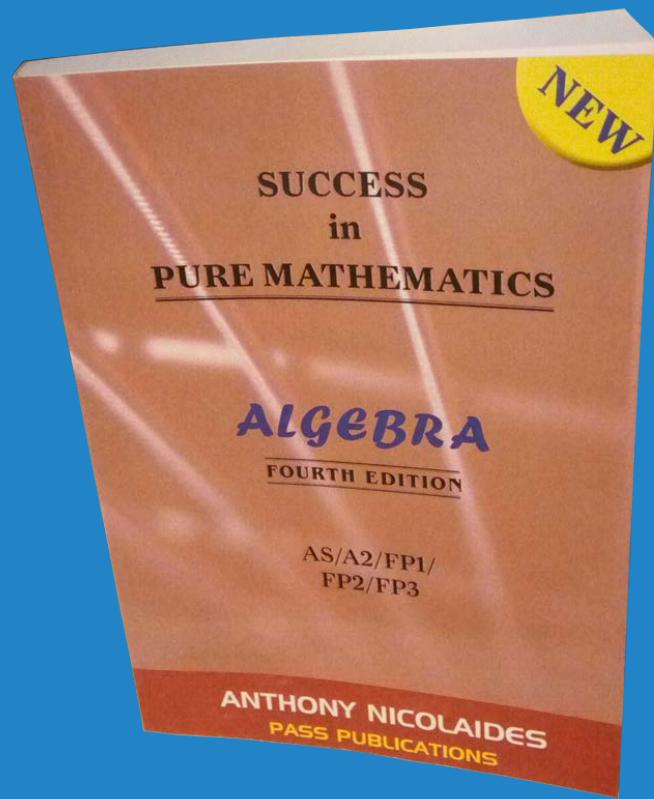
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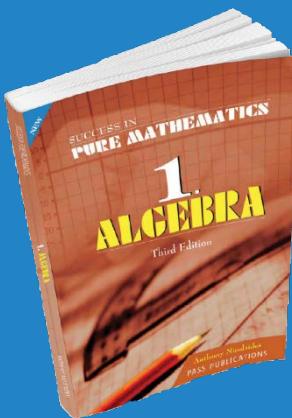
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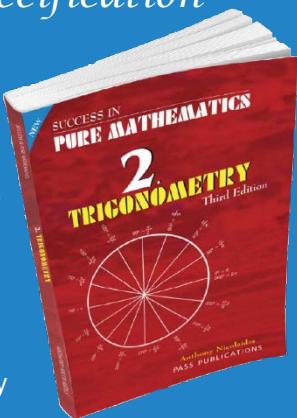
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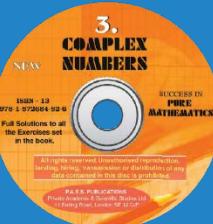
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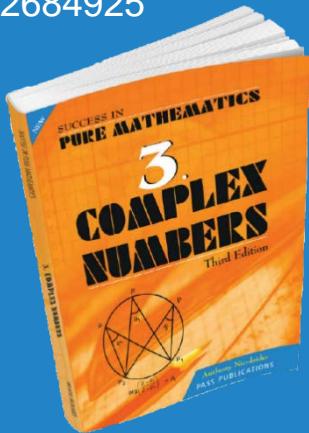
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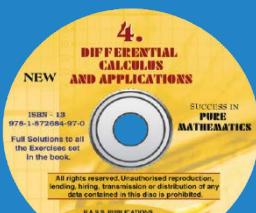
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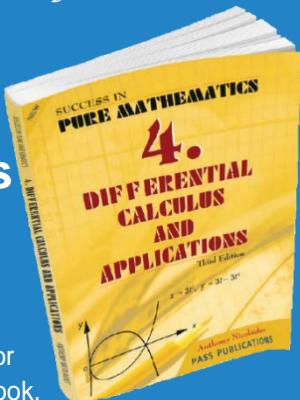
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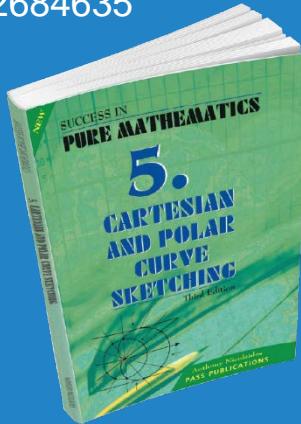
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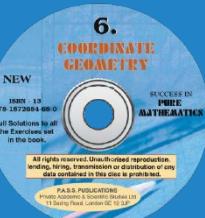
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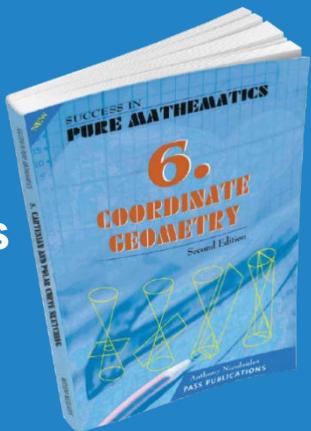
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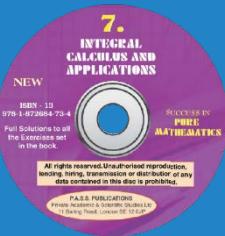
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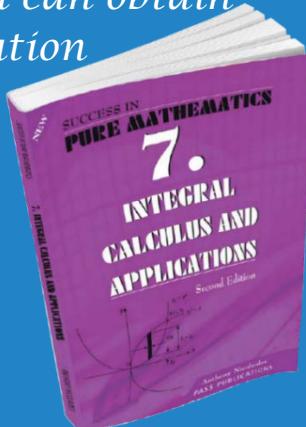
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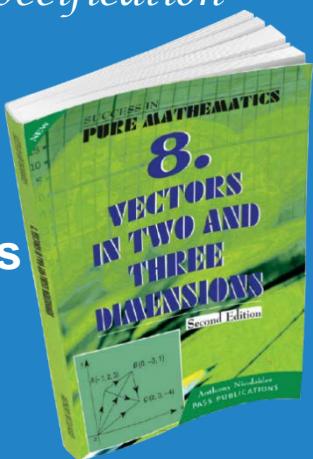
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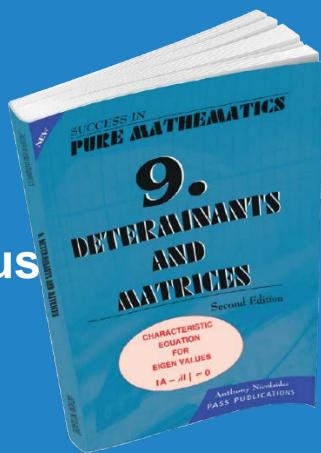
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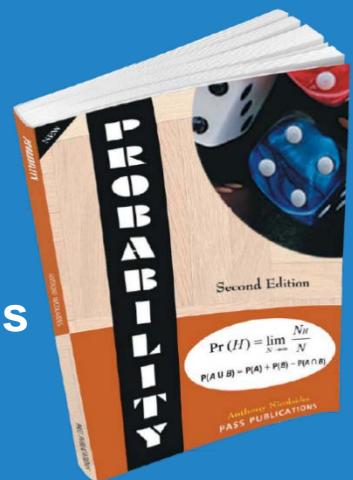
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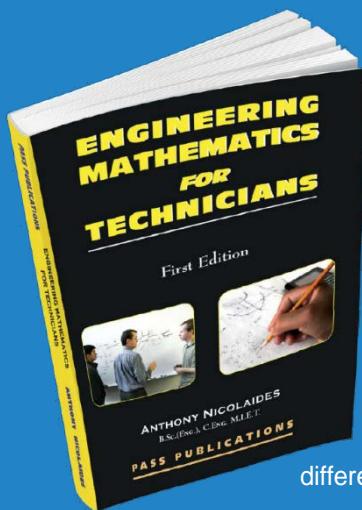
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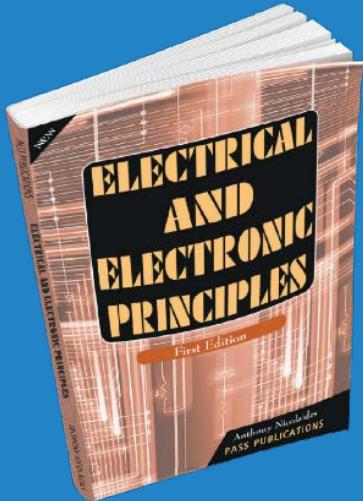
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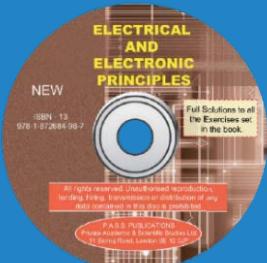
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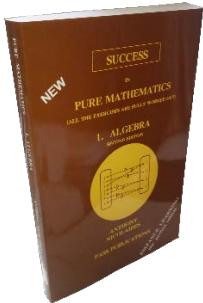
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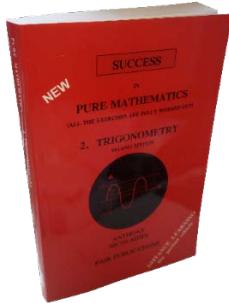
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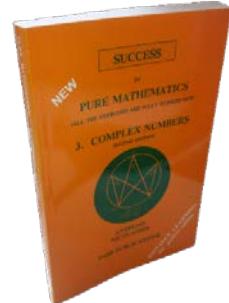
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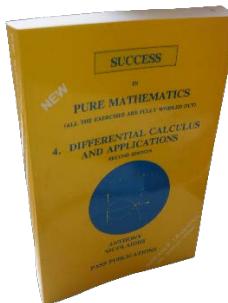
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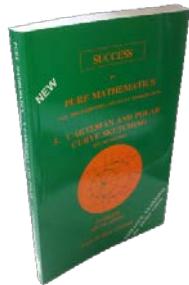
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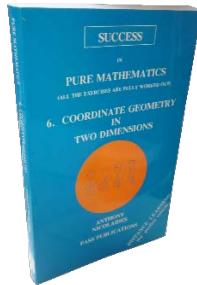
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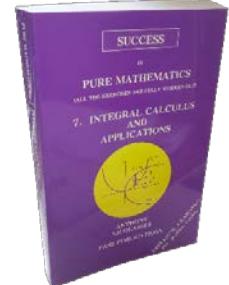
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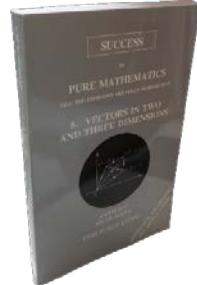
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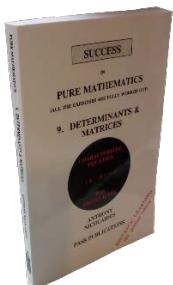
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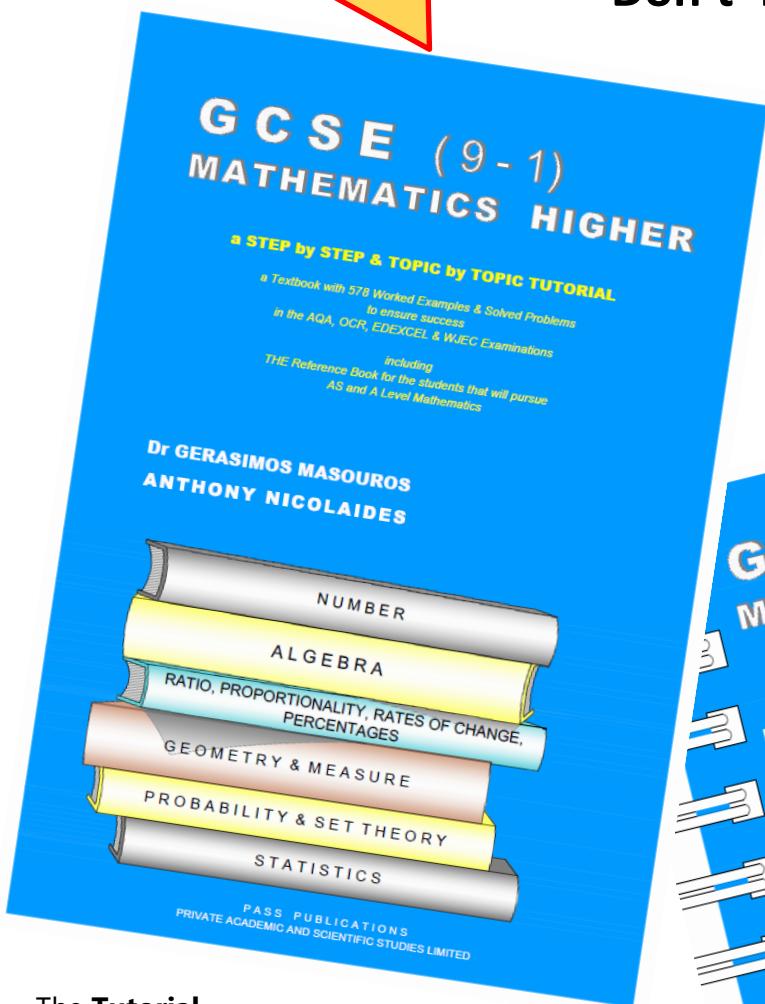
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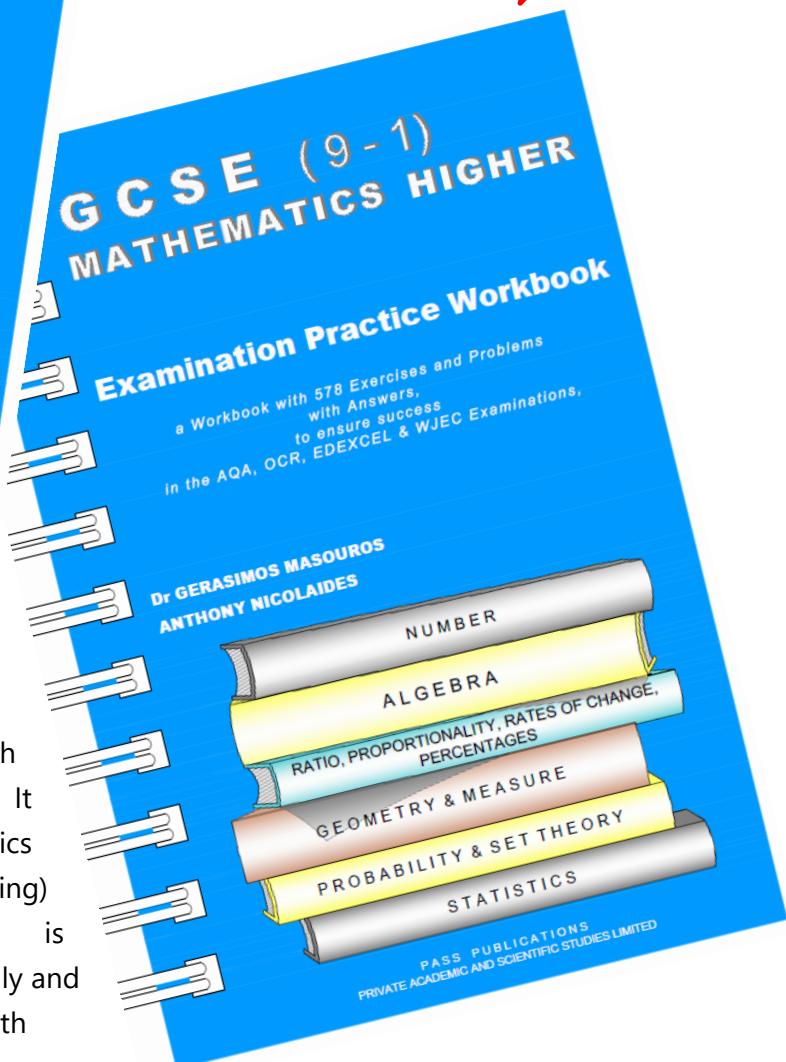
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Congruent angles

Congruent angles are two or more angles which are equal, that is they have equal measure. As is generally true, two angles are congruent when their lines are either parallel or perpendicular to each other.

Based on the figure below, assume that the lines c and i intersect at point A , forming the angle α . Also, assume that lines a and b are perpendicular to c and i respectively. Then we have that

$$\hat{\alpha} = \hat{a} + \hat{b} = \hat{c} + \hat{i} = \hat{g}$$

Observe that $\hat{a} + \hat{b} = \hat{c} + \hat{i}$, as they are opposite angles.

Also, as $\hat{a} \perp c$ and $\hat{b} \perp i$,

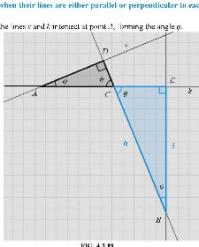
$$\hat{a} = 90^\circ - \hat{c}$$

$$\hat{b} = 90^\circ - \hat{i}$$

Similarly, as the angle $\hat{c} + \hat{i}$,

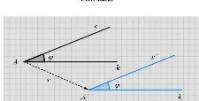
$$\hat{g} = 90^\circ - \hat{a} + 90^\circ - \hat{b} = 180^\circ - \hat{a} - \hat{b}$$

So, $\hat{\alpha} = \hat{g}$.



In the adjacent figure, assume that lines c and i are parallel. Same for a and b . Then, $\hat{\alpha} = \hat{g}$ as \hat{a} is perpendicular to c and \hat{b} is perpendicular to i . As the angle $\hat{c} + \hat{i}$ is the sum of the two remote interior angles, then:

$$\hat{c} + \hat{i} = \hat{g}$$



Angles in Triangles

Two interesting properties of the angles of every triangle are:

(i) The sum of the interior angles of a triangle add up to 180° .

(ii) The exterior angle of a triangle equals to the sum of the two remote interior.

Both properties are explained in the following figure.

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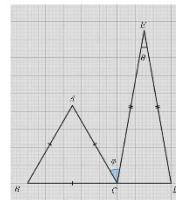
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EXAM PRACTICE QUESTION 4.38

(ANSWER: $\theta = 40^\circ$)

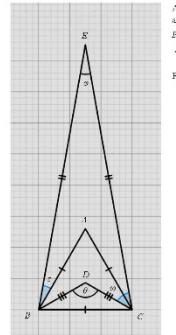


An equilateral triangle ABC and an isosceles triangle BCD share the same vertex C . Also, the vertices B , C and D are on the same line and the angle $\angle BCD = \theta$ is 20° .

Find the shaded blue angle ϕ .

EXAM PRACTICE QUESTION 4.39

(ANSWER: $\gamma = 20^\circ$, $\alpha = 50^\circ$)



An equilateral triangle ABC is equilateral triangle ABC and another isosceles triangle BCR share the same side BC . Also, angle $\angle BDC = \theta = 120^\circ$ and $\angle BCR = \alpha = 20^\circ$.

Find the shaded blue angles α and γ .



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