
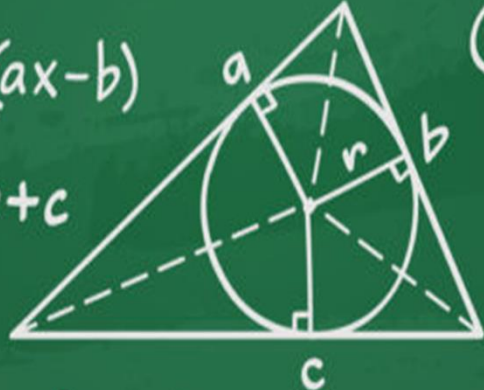



Advanced Mathematics

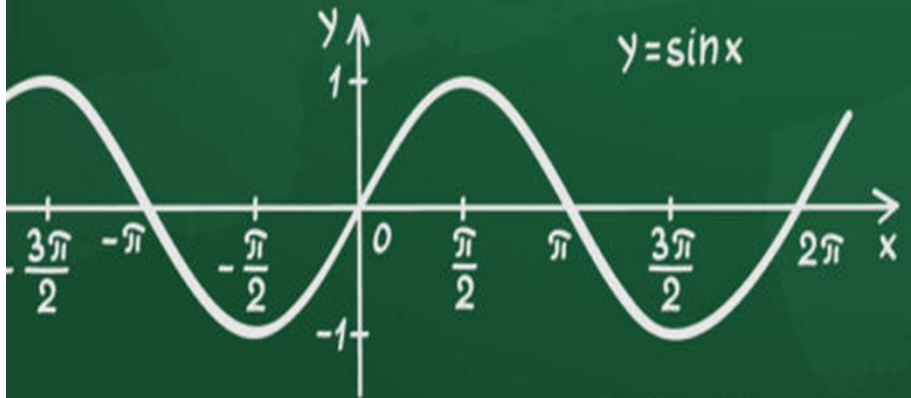
$(x_2 - x_1)^2 + (y_2 - y_1)^2$
 $2x + 3x + 4 = y$
 $\log_c\left(\frac{a}{b}\right) = \log_c a - \log_c b$
 $\sum_{k=1}^n k = \frac{1}{2}n(n+1)$
 $\log_a a = c$
 $64 + 36 = c$
 $100 = c^2$
 $\sqrt{100} = \sqrt{c^2}$
 $\pm 10 = c$

B.14
 $f(-x) = a(-x) + b = -(ax - b)$
 $(x+y)^n = \sum_{k=0}^n {}^n C_k x^{n-k} y^k$
 $\sqrt{2}$



 $a^b a^c = a^{b+c}$

 $3^0 = 1$

 $\frac{x}{x+2} - \frac{8}{x+6} =$
 $= \frac{16}{x^2 + 8x + 6}$

$\sin^2 y + \cos^2 y = 1$
 $y = \frac{k}{x}$
 $\sqrt[n]{x} = x^{\frac{1}{n}}$
 $c^2 = a^2 + b^2$

$(a-b-c)^2 = a^2 + b^2 + c^2 - 2ab + 2bc - 2ca$
 $y = ax^2 + bx + c$
 $A = \frac{1}{2}ar + \frac{1}{2}br + \frac{1}{2}cr$
 $\tan 60^\circ = \sqrt{3}$
 $C = 2\pi r$


 $A = sr$
 $r = \frac{A}{s}$
 $\tan 30^\circ = \frac{1}{\sqrt{3}}$

$(8^2)^3 = 8^{2 \times 3} = 8^6$
 $\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3$
 $s = \frac{a+b+c}{2}$



$(a+b)(a^2 - ab + b^2)$

Advanced Mathematic

CHAPTER 1/ Lines, Angles, and Triangles

- 1.1 Historical Background of Geometry
- 1.2 Undefined Terms of Geometry: Point, Line, and Plane
- 1.3 Line Segments
- 1.4 Circles
- 1.5 Angles
- 1.6 Triangles
- 1.7 Pairs of Angles



Advanced Mathematic

CHAPTER 21 Methods of Proof

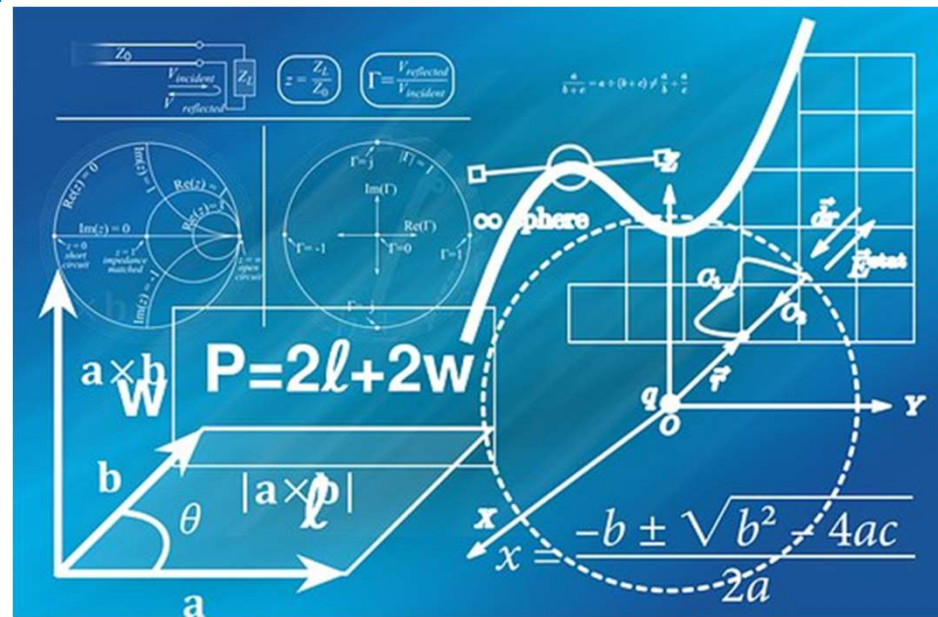
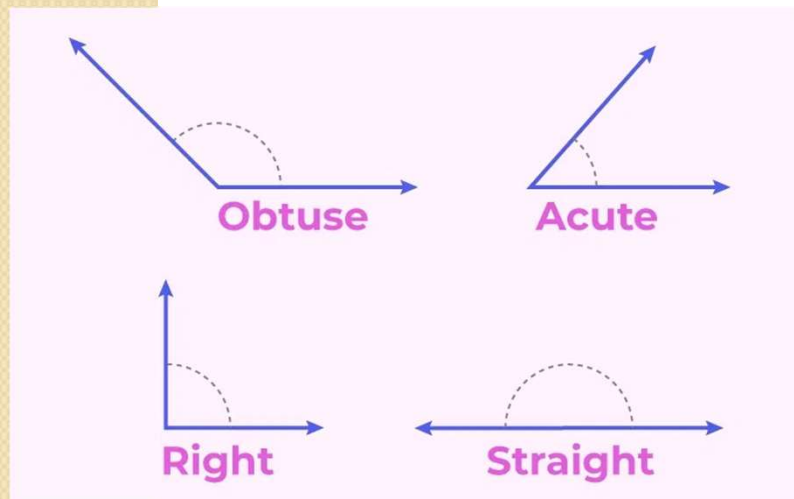
2.1 Proof By Deductive Reasoning

2.2 Postulates (Assumptions)

2.3 Basic Angle Theorems

2.4 Determining the Hypothesis and Conclusion

2.5 Proving a Theorem



Advanced Mathematic

CHAPTER 3I Congruent Triangles

3.1 Congruent Triangles

3.2 Isosceles and Equilateral Triangles

The image contains a vast array of handwritten mathematical content, including:

- Geometry:**
 - Diagrams of triangles with various labels (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z) and associated formulas for area, perimeter, and side lengths.
 - Diagrams of circles and sectors with formulas for area and arc length.
 - Diagrams of cylinders and cones with formulas for volume and surface area.
 - Diagrams of rectangular prisms and cubes with formulas for volume and surface area.
 - Diagrams of spheres and segments with formulas for volume and surface area.
- Trigonometry:**
 - Formulas for sine, cosine, and tangent of various angles.
 - Formulas for the area of a triangle using trigonometric functions.
 - Formulas for the height of a triangle and other geometric relationships.
- Algebra and Calculus:**
 - Formulas for the area of a circle segment.
 - Formulas for the area of a circular sector.
 - Formulas for the area of a circular segment.
 - Formulas for the area of a circular segment.

Advanced Mathematic

CHAPTER 4 Parallel Lines, Distances, and Angle Sums

4.1 Parallel Lines

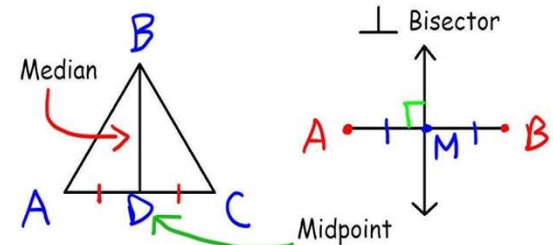
4.2 Distances

4.3 Sum of the Measures of the Angles of a Triangle

4.4 Sum of the Measures of the Angles of a Polygon

4.5 Two New Congruency Theorems

Intro To Geometry



Advanced Mathematic

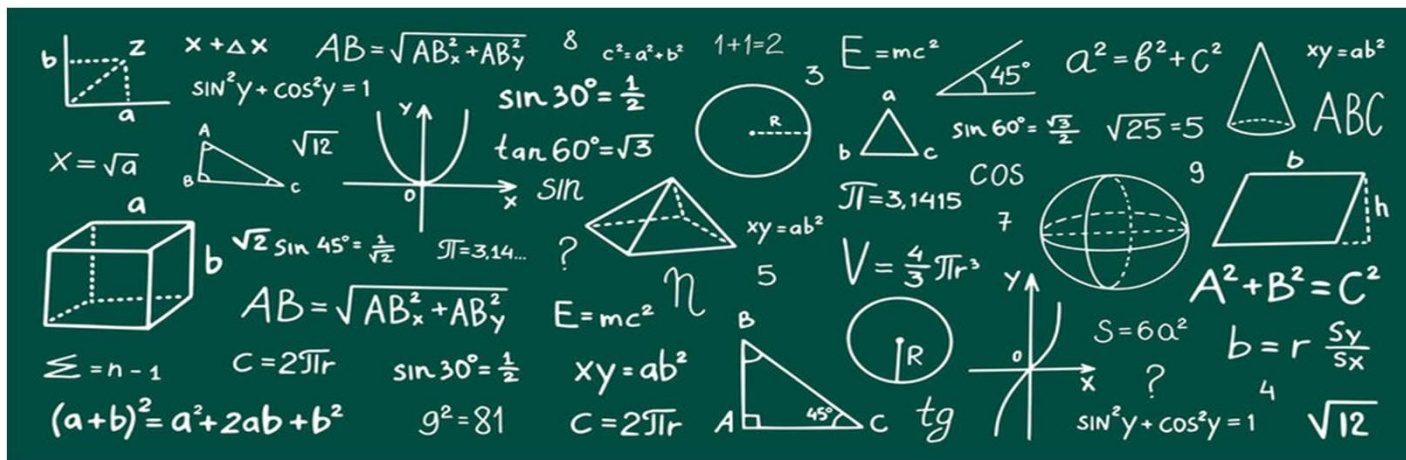
CHAPTER 5I Parallelograms, Trapezoids, Medians, and Midpoints

5.1 Trapezoids

5.2 Parallelograms

5.3 Special Parallelograms: Rectangle, Rhombus, and Square

5.4 Three or More Parallels; Medians and Midpoints



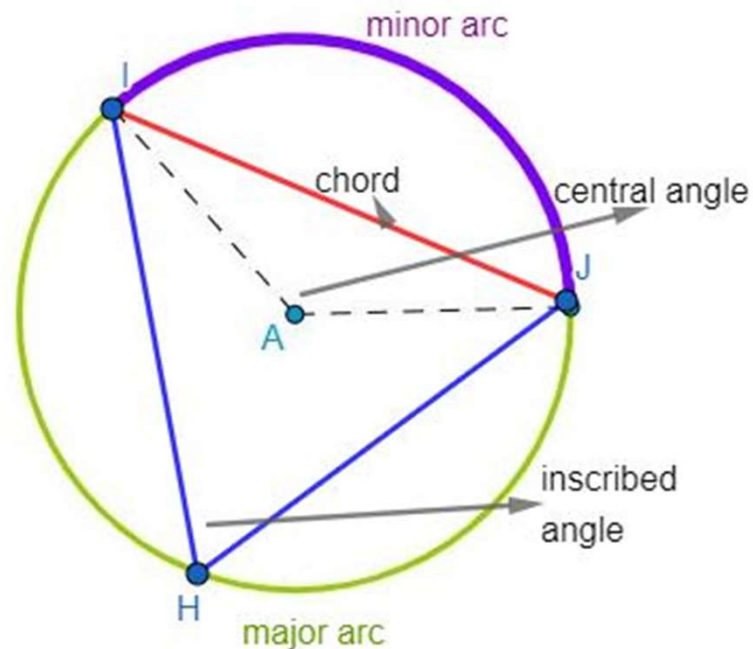
Advanced Mathematic

CHAPTER 6/ Circles

6.1 The Circle; Circle Relationships

6.2 Tangents

6.3 Measurement of Angles and Arcs in a Circle



Advanced Mathematic

CHAPTER 7I Similarity

7.1 Ratios

7.2 Proportions

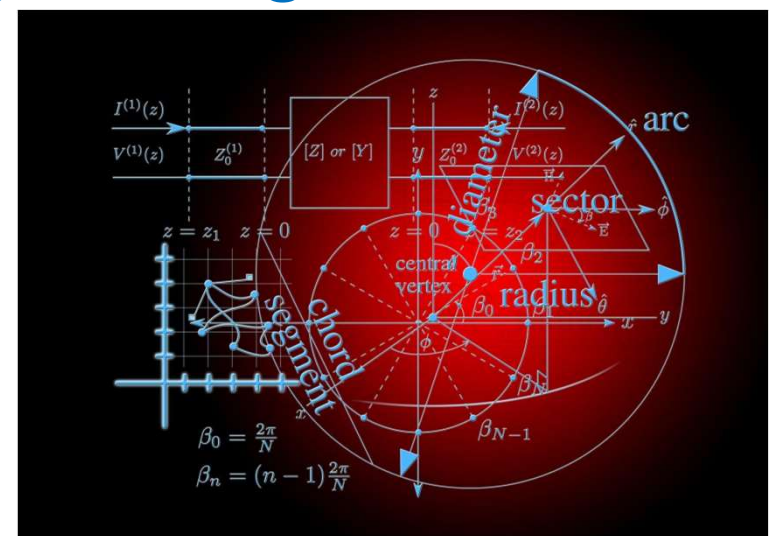
7.3 Proportional Segments

7.4 Similar Triangles

7.8 Mean Proportionals in a Right Triangle

7.9 Pythagorean Theorem

7.10 Special Right Triangles



Advanced Mathematic

CHAPTER 8/ Trigonometry

8.1 Trigonometric Ratios

8.2 Angles of Elevation and Depression



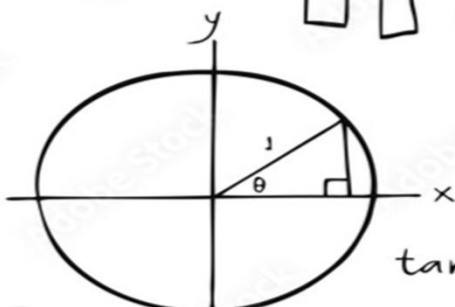
$$\sin(2A) = 2 \sin A \cos A$$

$$\cos(2A) = (\cos A)^2 - (\sin A)^2$$

$$\tan(2A) = \frac{2 \tan A}{1 - (\tan A)^2}$$

$$\sin(-B) = -\sin B$$

$$\begin{aligned} \sin(A-B) &= \sin A \cos B \\ &\quad - \sin B \cos A \end{aligned}$$



$$\tan A = \frac{\sin A}{\cos A}$$

$$\cos\left(\frac{A}{2}\right) = \pm \sqrt{\frac{1+\cos A}{2}} \quad \tan(-A) = -\tan(A)$$

$$\tan \varphi = \frac{a}{b} \quad (\sin A)^2 + (\cos A)^2 = 1$$

$$(\tan A)^2 + (1)^2 = (\sec A)^2$$

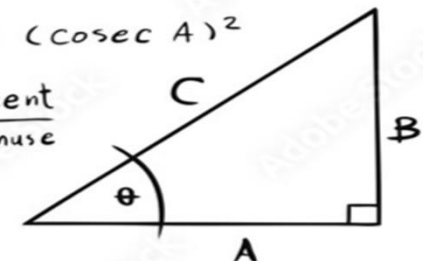
$$\sin \alpha = \frac{\text{opposite}}{\text{hypotenuse}} \quad (\cot A)^2 + (1)^2 = (\text{cosec } A)^2$$

$$(\sin A)^2 + (\cos A)^2 = 1$$

$$(\tan A)^2 + (1)^2 = (\sec A)^2$$

$$(\cot A)^2 + (1)^2 = (\text{cosec } A)^2$$

$$\cos \alpha = \frac{\text{adjacent}}{\text{hypotenuse}}$$



$$\tan \alpha = \frac{\text{opposite}}{\text{adjacent}}$$

Trigonometry

$$\sin(90 - A) = \cos A$$

$$\cos(90 - A) = \sin A$$

$$\sec A = \frac{1}{\cos A}$$

$$\cot A = \frac{1}{\tan A}$$

$$\begin{aligned} \sin(A+B) &= \sin A \cos B + \sin B \cos A \end{aligned}$$

$$\begin{aligned} \cos(A+B) &= \cos A \cos B - \sin A \sin B \end{aligned}$$

Advanced Mathematic

CHAPTER 9 Areas

9.1 Area of a Rectangle and of a Square

9.2 Area of a Parallelogram

9.3 Area of a Triangle

9.4 Area of a Trapezoid

9.5 Area of a Rhombus

9.6 Polygons of the Same Size or Shape

9.7 Comparing Areas of Similar Polygons

Advanced Mathematic

CHAPTER 10 Regular Polygons and the Circle

10.1 Regular Polygons

10.2 Relationships of Segments in Regular Polygons
of 3, 4, and 6 Sides

10.3 Area of a Regular Polygon

10.4 Ratios of Segments and Areas of Regular Polygons

10.5 Circumference and Area of a Circle

10.6 Length of an Arc; Area of a Sector and a Segment

10.7 Areas of Combination Figures

Advanced Mathematic

CHAPTER 11 Locus

11.1 Determining a Locus

11.2 Locating Points by Means of Intersecting Loci

11.3 Proving a Locus

Geometry



Advanced Mathematic

Extra! Problems

Extra Problems

