HTML Project file

22.12.2023

Rafay Sheikh
10th Pioneer
Roll no. 23
Mount Litera Zee School

CODE OF 1st PART

```
<!DOCTYPE html>
<html>

<head>
<!--Setting up title of Trigonometry-->
<title>TRIGONOMETRY</title>
<!--Code of Setting up color of Body,Headings and Paragraph-->
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    H2 {color: darkgray;}
    P {color: black;}
</style>
</head>

<body leftmargin  = 40 topmargin = 60 >
<!--Code of Setting up Heading of Trigonometry-->
<header>
<h1><em><u>TRIGONOMETRY</u></em></h1>
</header>
<P><hr width="100%"></P>
<!--Code of Setting up Sub-Heading-->
<dl>
<dt><h1 align=center><em><u>WHAT IS TRIGONOMETRY</u></em></h1>
<!--Content of What is Trigonometry in Paragraph Tag-->
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<p><font size = 7 >T</font>rigonometry (from Ancient Greek τρίγωνον (trígōnon)
'triangle', and μέτρον (métron) 'measure') is a branch of mathematics concerned with
relationships between angles and ratios of lengths. The field emerged in the
Hellenistic world during the 3rd century BC from applications of geometry to
astronomical studies. The Greeks focused on the calculation of chords, while
mathematicians in India created the earliest-known tables of values for trigonometric
ratios (also called trigonometric functions) such as sine.


<P>Throughout history, trigonometry has been applied in areas such as geodesy,
surveying, celestial mechanics, and navigation.


<P>Trigonometry is known for its many identities. These trigonometric identities are
commonly used for rewriting trigonometrical expressions with the aim to simplify an
expression, to find a more useful form of an expression, or to solve an
equation.</dl>

<!--Inserting Image-->

<p align = center><img src="1.svg.png" alt="1" width="250" height="250" border="2">
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Output of 1st Part

TRIGONOMETRY

WHAT IS TRIGONOMETRY

Trigonometry (from Ancient Greek τρίγωνον (trígōnon) 'triangle', and μέτρον (métron) 'measure') is a branch of mathematics concerned with relationships between angles and ratios of lengths. The field emerged in the Hellenistic world during the 3rd century BC from applications of geometry to astronomical studies. The Greeks focused on the calculation of chords, while mathematicians in India created the earliest-known tables of values for trigonometric ratios (also called trigonometric functions) such as sine.

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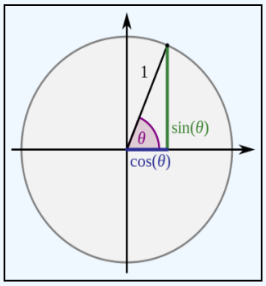
Trigonometry is known for its many identities. These trigonometric identities are commonly used for rewriting trigonometrical expressions with the aim to simplify an expression, to find a more useful form of an expression, or to solve an equation.



CODE OF 2nd PART

```
<!--Code of Setting up Sub-Heading-->

<dl>

<dt><h2 align=center><em><u>HISTORY IS TRIGONOMETRY</u></em></h2>

<!--Content of History is Trigonometry in Paragraph Tag-->

<p> Sumerian astronomers studied angle measure, using a division of circles into 360 degrees. They, and later the Babylonians, studied the ratios of the sides of similar triangles and discovered some properties of these ratios but did not turn that into a systematic method for finding sides and angles of triangles. The ancient Nubians used a similar method.


<p>In the 3rd century BC, Hellenistic mathematicians such as Euclid and Archimedes studied the properties of chords and inscribed angles in circles, and they proved theorems that are equivalent to modern trigonometric formulae, although they
```

presented them geometrically rather than algebraically. In 140 BC, Hipparchus (from Nicaea, Asia Minor) gave the first tables of chords, analogous to modern tables of sine values, and used them to solve problems in trigonometry and spherical trigonometry. In the 2nd century AD, the Greco-Egyptian astronomer Ptolemy (from Alexandria, Egypt) constructed detailed trigonometric tables (Ptolemy's table of chords) in Book 1, chapter 11 of his Almagest. Ptolemy used chord length to define his trigonometric functions, a minor difference from the sine convention we use today. (The value we call sin(θ) can be found by looking up the chord length for twice the angle of interest in Ptolemy's table, and then dividing that value by two.) Centuries passed before more detailed tables were produced, and Ptolemy's treatise remained in use for performing trigonometric calculations in astronomy throughout the next 1200 years in the medieval Byzantine, Islamic, and, later, Western European worlds.

<p>The modern sine convention is first attested in the Surya Siddhanta, and its properties were further documented by the 5th century (AD) Indian mathematician and astronomer Aryabhata. These Greek and Indian works were translated and expanded by medieval Islamic mathematicians. In 830 AD, Persian mathematician Habash al-Hasib al-Marwazi produced the first table of cotangents. By the 10th century AD, in the work of Persian mathematician Abū al-Wafā' al-Būzjānī, all six trigonometric functions were used. Abu al-Wafa had sine tables in 0.25° increments, to 8 decimal places of accuracy, and accurate tables of tangent values. He also made important innovations in spherical trigonometry The Persian polymath Nasir al-Din al-Tusi has been described as the creator of trigonometry as a mathematical discipline in its own right. He was the first to treat trigonometry as a mathematical discipline independent from astronomy, and he developed spherical trigonometry into its present form. He listed the six distinct cases of a right-angled triangle in spherical trigonometry, and in his On the Sector Figure, he stated the law of sines for plane and spherical triangles, discovered the law of tangents for spherical triangles, and provided proofs for both these laws.[24] Knowledge of trigonometric functions and methods reached Western Europe via Latin translations of Ptolemy's Greek Almagest as well as the works of Persian and Arab astronomers such as Al Battani and Nasir al-Din al-Tusi. One of the earliest works on trigonometry by a northern European mathematician is De Triangulis by the 15th century German mathematician Regiomontanus, who was encouraged to write, and provided with a copy of the Almagest, by the Byzantine Greek scholar cardinal Basilios Bessarion with whom he lived for several years.[26] At the same time, another translation of the Almagest from Greek

into Latin was completed by the Cretan George of Trebizond. Trigonometry was still so little known in 16th-century northern Europe that Nicolaus Copernicus devoted two chapters of De revolutionibus orbium coelestium to explain its basic concepts.

<p>Driven by the demands of navigation and the growing need for accurate maps of large geographic areas, trigonometry grew into a major branch of mathematics. Bartholomaeus Pitiscus was the first to use the word, publishing his Trigonometria in 1595. Gemma Frisius described for the first time the method of triangulation still used today in surveying. It was Leonhard Euler who fully incorporated complex numbers into trigonometry. The works of the Scottish mathematicians James Gregory in the 17th century and Colin Maclaurin in the 18th century were influential in the development of trigonometric series. Also in the 18th century, Brook Taylor defined the general Taylor series.</dl>

Output of 2nd Part

HISTORY IS TRIGONOMETRY

Sumerian astronomers studied angle measure, using a division of circles into 360 degrees. They, and later the Babylonians, studied the ratios of the sides of similar triangles and discovered some properties of these ratios but did not turn that into a systematic method for finding sides and angles of triangles. The ancient Nubians used a similar method.

In the 3rd century BC, Hellenistic mathematicians such as Euclid and Archimedes studied the properties of chords and inscribed angles in circles, and they proved theorems that are equivalent to modern trigonometric formulae, although they presented them geometrically rather than algebraically. In 140 BC, Hipparchus (from Nicaea, Asia Minor) gave the first tables of chords, analogous to modern tables of sine values, and used them to solve problems in trigonometry and spherical trigonometry. In the 2nd century AD, the Greco-Egyptian astronomer Ptolemy (from Alexandria, Egypt) constructed detailed trigonometric tables (Ptolemy's table of chords) in Book 1, chapter 11 of his Almagest. Ptolemy used chord length to define his trigonometric functions, a minor difference from the sine convention we use today. (The value we call sin(θ) can be found by looking up the chord length for twice the angle of interest in Ptolemy's table, and then dividing that value by two.) Centuries passed before more detailed tables were produced, and Ptolemy's treatise remained in use for performing trigonometric calculations in astronomy throughout the next 1200 years in the medieval Byzantine, Islamic, and, later, Western European worlds.

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CODE OF 3rd PART

<!--Code of Setting up Sub-Heading-->

```
<dl>
<dt><h2 align=center><em><u>TRIGONOMETRIC RATIOS</u></em></h2>
<!--Content of Trigonometric Ratios in Paragraph Tag-->
<p>Trigonometric ratios are the ratios between edges of a right triangle. These
      ratios depend only on one acute angle of the right triangle, since any two
      right triangles with the same acute angle are similar.

<P>So, these ratios define functions of this angle that are called trigonometric
      functions. Explicitly, they are defined below as functions of the known angle
      A, where a, b and h refer to the lengths of the sides in the accompanying
      figure:
<!--Inserting Image-->
<p align = center><img src="1.png" alt="1" width="250" height="250" border="1">

<ul><li>Sine (denoted sin), defined as the ratio of the side opposite the angle to
      the hypotenuse.</ul>
<!--Source Code of Formula-->
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<ul><li>Cosine (denoted cos), defined as the ratio of the adjacent leg (the side of the triangle joining the angle to the right angle) to the hypotenuse.</ul>



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</g>
</g>
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</g>
</svg>

<ul><li>Tangent (denoted tan), defined as the ratio of the opposite leg to the adjacent leg.</ul>

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<title id="MathJax-SVG-1-Title">{\displaystyle \tan A={\frac {\textrm {opposite}}{\textrm {adjacent}}}={\frac {a}{b}}={\frac {a/h}{b/h}}={\frac {\sin A}{\cos A}}.}</title>
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</g>
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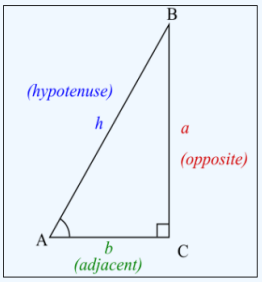
Output of 3rd Part

TRIGNOMETRIC RATIOS

Trigonometric ratios are the ratios between edges of a right triangle. These ratios depend only on one acute angle of the right triangle, since any two right triangles with the same acute angle are similar.

So, these ratios define functions of this angle that are called trigonometric functions. Explicitly, they are defined below as functions of the known angle A, where a, b and h refer to the lengths of the sides in the accompanying figure:



- Sine (denoted sin), defined as the ratio of the side opposite the angle to the hypotenuse.

$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{a}{h}.$$

- Cosine (denoted cos), defined as the ratio of the adjacent leg (the side of the triangle joining the angle to the right angle) to the hypotenuse.

$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{b}{h}.$$

- Tangent (denoted tan), defined as the ratio of the opposite leg to the adjacent leg.

$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{a}{b} = \frac{a/h}{b/h} = \frac{\sin A}{\cos A}.$$

CODE OF 4th PART

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<!--Code of Trigonometric Table-->

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        <th>15&deg;</th>
        <th>30&deg;</th>
        <th>45&deg;</th>
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        <th>105&deg;</th>
        <th>120&deg;</th>
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        <th>195&deg;</th>
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        <th>225&deg;</th>
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        <th>285&deg;</th>
        <th>300&deg;</th>
        <th>315&deg;</th>
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```

```
        <th>345&deg;</th>
        <th>360&deg;</th>
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        <th><u>&Pi;</u><br>3</th>
        <th><u>5&Pi;</u><br>12</th>
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        <th>&Pi;</th>
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        <th><u>7&Pi;</u><br>6</th>
        <th><u>5&Pi;</u><br>4</th>
        <th><u>4&Pi;</u><br>3</th>
        <th><u>17&Pi;</u><br>12</th>
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        <th><u>19&Pi;</u><br>12</th>
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        <th><u>7&Pi;</u><br>4</th>
```

```
    <th><u>11&Pi;</u><br>6</th>
    <th><u>22&Pi;</u><br>12</th>
    <th>2&Pi;</th>
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    <th>Sin</th>
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    <td><u>1</u><br>&radic;2</td>
    <td><u>&radic;3</u><br>2</td>
    <td><u>&radic;3 + 1</u><br>2&radic;2</td>
    <td>1</td>
    <td><u>&radic;3 + 1</u><br>2&radic;2</td>
    <td><u>&radic;3</u><br>3</td>
    <td><u>1</u><br>&radic;2</td>
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    <td><u>&radic;3 - 1</u><br>2&radic;2</td>
    <td>0</td>
    <td><u>1 - &radic;3</u><br>2&radic;2</td>
    <td><u>-1</u><br>2</td>
    <td><u>-1</u><br>&radic;2</td>
    <td><u>-&radic;3</u><br>2</td>
    <td><u>-&radic;3 - 1</u><br>2&radic;2</td>
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    <td><u>- &radic;3 - 1</u><br>2&radic;2</td>
    <td><u>- &radic;3</u><br>2</td>
```

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        <td><u>-1</u><br>&radic;2</td>
        <td><u>-1</u><br>2</td>
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    <tr ALIGN = "CENTER">
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        <td><u>1</u><br>2</td>
        <td><u>&radic;3 - 1</u><br>2&radic;2</td>
        <td>0</td>
        <td><u>1 - &radic;3</u><br>2&radic;2</td>
        <td><u>-1</u><br>2</td>
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        <td><u>- &radic;3 - 1</u><br>2&radic;2</td>
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        <td><u>- &radic;3 - 1</u><br>2&radic;2</td>
        <td><u>- &radic;3</u><br>2</td>
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        <td><U>1 - &radic;3</U><br>2&radic;2</td>
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        <td><u>&radic;3 - 1</u><br>2&radic;2</td>
```

```
        <td><u>1</u><br>2</td>
        <td><u>1</u><br>&radic;2</td>
        <td><u>&radic;3</u><br>2</td>
        <td><u>&radic;3 + 1</u><br>2&radic;2</td>
        <td>1</td>
    </tr>

    <tr ALIGN = "CENTER">
        <th>Tan</th>
        <td>0</td>
        <TD>2 - &radic;3</TD>
        <td><u>1</u><br>&radic;3</td>
        <td>1</td>
        <td>&radic;3</td>
        <TD>2 + &radic;3</TD>
        <td>Not Defined</td>
        <TD>- 2 - &radic;3</TD>
        <td>- &radic;3</td>
        <td>- 1</td>
        <td><u>- 1</u><br>&radic;3</td>
        <TD>&radic;3 - 2</TD>
        <td>0</td>
        <TD>2 - &radic;3</TD>
        <td><u>1</u><br>&radic;3</td>
        <td>1</td>
        <td>&radic;3</td>
        <TD>2 + &radic;3</TD>
        <td>Not Defined</td>
```

```
    <TD>- 2 - &radic;3</TD>
    <td>- &radic;3</td>
    <td>- 1</td>
    <td><u>- 1</u><br>&radic;3</td>
    <TD>&radic;3 - 2</TD>
    <td>0</td>
</tr>

<TR ALIGN = "CENTER">
    <TH>Cot</TH>
    <td>Not Defined</td>
    <TD>2 + &radic;3</TD>
    <td>&radic;3</td>
    <td>1</td>
    <td><u>1</u><br>&radic;3</td>
    <TD>2 - &radic;3</TD>
    <td>0</td>
    <TD>&radic;3 - 2</TD>
    <td><u>- 1</u><br>&radic;3</td>
    <td>- 1</td>
    <td>- &radic;3</td>
    <TD>- 2 - &radic;3</TD>
    <td>Not Defined</td>
    <TD>2 + &radic;3</TD>
    <td>&radic;3</td>
    <td>1</td>
    <td><u>1</u><br>&radic;3</td>
    <TD>2 - &radic;3</TD>
```

```
    <td>0</td>
    <TD>&radic;3 - 2</TD>
    <td><u>- 1</u><br>&radic;3</td>
    <td>- 1</td>
    <td>- &radic;3</td>
    <TD>- 2 - &radic;3</TD>
    <td>Not Defined</td>
</TR>

<tr ALIGN = "CENTER">
    <th>Sec</th>
    <td>1</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td><u>2</u><br>&radic;3</td>
    <td>&radic;2</td>
    <td>2</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>Not Defined</td>
    <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
    <td>- 2</td>
    <td>- &radic;2</td>
    <td><u>- 2</u><br>&radic;3</td>
    <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
    <td>- 1</td>
    <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
    <td><u>- 2</u><br>&radic;3</td>
    <td>- &radic;2</td>
    <td>- 2</td>
```

```
    <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
    <td>Not Defined</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>2</td>
    <td>&radic;2</td>
    <td><u>2</u><br>&radic;3</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td>1</td>
</tr>

<TR ALIGN = "CENTER">
    <th>Cosec</th>
    <td>Not Defined</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>2</td>
    <td>&radic;2</td>
    <td><u>2</u><br>&radic;3</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td>1</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td><u>2</u><br>&radic;3</td>
    <td>&radic;2</td>
    <td>2</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>Not Defined</td>
    <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
    <td>- 2</td>
    <td>- &radic;2</td>
```

```
        <td><u>- 2</u><br>&radic;3</td>
        <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
        <td>- 1</td>
        <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
        <td><u>- 2</u><br>&radic;3</td>
        <td>- &radic;2</td>
        <td>- 2</td>
        <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
        <td>Not Defined</td>
    </TR>
</table>
```

Output of 4th Part

TRIGONOMETRY TABLE

Degree	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°	360°
Radian	0	$\frac{\Pi}{12}$	$\frac{\Pi}{6}$	$\frac{\Pi}{4}$	$\frac{\Pi}{3}$	$\frac{5\Pi}{12}$	$\frac{\Pi}{2}$	$\frac{7\Pi}{12}$	$\frac{2\Pi}{3}$	$\frac{3\Pi}{4}$	$\frac{5\Pi}{6}$	$\frac{11\Pi}{12}$	Π	$\frac{13\Pi}{12}$	$\frac{7\Pi}{6}$	$\frac{5\Pi}{4}$	$\frac{4\Pi}{3}$	$\frac{17\Pi}{12}$	$\frac{3\Pi}{2}$	$\frac{19\Pi}{12}$	$\frac{5\Pi}{3}$	$\frac{7\Pi}{4}$	$\frac{11\Pi}{6}$	$\frac{22\Pi}{12}$	2Π
Sin	0	$\frac{\sqrt{3}-1}{2\sqrt{2}}$	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}+1}{2\sqrt{2}}$	1	$\frac{\sqrt{3}+1}{2\sqrt{2}}$	$\frac{\sqrt{3}}{3}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	$\frac{\sqrt{3}-1}{2\sqrt{2}}$	0	$\frac{1-\sqrt{3}}{2\sqrt{2}}$	$\frac{-1}{2}$	$\frac{-1}{\sqrt{2}}$	$\frac{-\sqrt{3}}{2}$	$\frac{-\sqrt{3}-1}{2\sqrt{2}}$	-1	$\frac{-\sqrt{3}-1}{2\sqrt{2}}$	$\frac{-\sqrt{3}}{2}$	$\frac{-1}{\sqrt{2}}$	$\frac{-1}{2}$	$\frac{1-\sqrt{3}}{2\sqrt{2}}$	0
Cos	1	$\frac{\sqrt{3}+1}{2\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	$\frac{\sqrt{3}-1}{2\sqrt{2}}$	0	$\frac{1-\sqrt{3}}{2\sqrt{2}}$	$\frac{-1}{2}$	$\frac{-1}{\sqrt{2}}$	$\frac{-\sqrt{3}}{2}$	$\frac{-\sqrt{3}-1}{2\sqrt{2}}$	-1	$\frac{-\sqrt{3}-1}{2\sqrt{2}}$	$\frac{-\sqrt{3}}{2}$	$\frac{-1}{\sqrt{2}}$	$\frac{-1}{2}$	$\frac{1-\sqrt{3}}{2\sqrt{2}}$	0	$\frac{\sqrt{3}-1}{2\sqrt{2}}$	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}+1}{2\sqrt{2}}$	1
Tan	0	$2-\sqrt{3}$	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	$2+\sqrt{3}$	Not Defined	$-2-\sqrt{3}$	$-\sqrt{3}$	-1	$\frac{-1}{\sqrt{3}}$	$\sqrt{3}-2$	0	$2-\sqrt{3}$	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	$2+\sqrt{3}$	Not Defined	$-2-\sqrt{3}$	$-\sqrt{3}$	-1	$\frac{-1}{\sqrt{3}}$	$\sqrt{3}-2$	0
Cot	Not Defined	$2+\sqrt{3}$	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	$2-\sqrt{3}$	0	$\sqrt{3}-2$	$\frac{-1}{\sqrt{3}}$	-1	$-\sqrt{3}$	$-2-\sqrt{3}$	Not Defined	$2+\sqrt{3}$	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	$2-\sqrt{3}$	0	$\sqrt{3}-2$	$\frac{-1}{\sqrt{3}}$	-1	$-\sqrt{3}$	$-2-\sqrt{3}$	Not Defined
Sec	1	$\frac{2\sqrt{2}}{\sqrt{3}+1}$	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	$\frac{2\sqrt{2}}{\sqrt{3}-1}$	Not Defined	$\frac{-2\sqrt{2}}{\sqrt{3}-1}$	-2	$-\sqrt{2}$	$\frac{-2}{\sqrt{3}}$	$\frac{-2\sqrt{2}}{\sqrt{3}+1}$	-1	$\frac{-2\sqrt{2}}{\sqrt{3}+1}$	$\frac{-2}{\sqrt{3}}$	$-\sqrt{2}$	-2	$\frac{-2\sqrt{2}}{\sqrt{3}-1}$	Not Defined	$\frac{2\sqrt{2}}{\sqrt{3}-1}$	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	$\frac{2\sqrt{2}}{\sqrt{3}+1}$	1
Cosec	Not Defined	$\frac{2\sqrt{2}}{\sqrt{3}-1}$	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	$\frac{2\sqrt{2}}{\sqrt{3}+1}$	1	$\frac{2\sqrt{2}}{\sqrt{3}+1}$	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	$\frac{2\sqrt{2}}{\sqrt{3}-1}$	Not Defined	$\frac{-2\sqrt{2}}{\sqrt{3}-1}$	-2	$-\sqrt{2}$	$\frac{-2}{\sqrt{3}}$	$\frac{-2\sqrt{2}}{\sqrt{3}+1}$	-1	$\frac{-2\sqrt{2}}{\sqrt{3}+1}$	$\frac{-2}{\sqrt{3}}$	$-\sqrt{2}$	-2	$\frac{-2\sqrt{2}}{\sqrt{3}-1}$	Not Defined

CODE OF 5th PART

```
<!--Code of Trigonometric Table-->


<p>
```

```
<table ALIGN = "CENTER" border="1" bordercolor="black" height=20% ,widtd =70%
BGCOLOR="WHITE" cellspacing = "2" cellpadding="2">
    <caption><h2><em><u><b>TRIGONOMETRIC TABLE</u></em></h2></caption>
    <tr>
        <th>Degree</th>
        <th>0&deg;</th>
        <th>15&deg;</th>
        <th>30&deg;</th>
        <th>45&deg;</th>
        <th>60&deg;</th>
        <th>75&deg;</th>
        <th>90&deg;</th>
        <th>105&deg;</th>
        <th>120&deg;</th>
        <th>135&deg;</th>
        <th>150&deg;</th>
        <th>165&deg;</th>
        <th>180&deg;</th>
        <th>195&deg;</th>
        <th>210&deg;</th>
        <th>225&deg;</th>
        <th>240&deg;</th>
        <th>255&deg;</th>
        <th>270&deg;</th>
        <th>285&deg;</th>
        <th>300&deg;</th>
        <th>315&deg;</th>
        <th>330&deg;</th>
```

```
        <th>345&deg;</th>
        <th>360&deg;</th>
    </tr>

    <tr ALIGN = "CENTER">
        <th>Radian</th>
        <th>0</th>
        <th><u>&Pi;</u><br>12</th>
        <th><u>&Pi;</u><br>6</th>
        <th><u>&Pi;</u><br>4</th>
        <th><u>&Pi;</u><br>3</th>
        <th><u>5&Pi;</u><br>12</th>
        <th><u>&Pi;</u><br>2</th>
        <th><u>7&Pi;</u><br>12</th>
        <th><u>2&Pi;</u><br>3</th>
        <th><u>3&Pi;</u><br>4</th>
        <th><u>5&Pi;</u><br>6</th>
        <th><u>11&Pi;</u><br>12</th>
        <th>&Pi;</th>
        <th><u>13&Pi;</u><br>12</th>
        <th><u>7&Pi;</u><br>6</th>
        <th><u>5&Pi;</u><br>4</th>
        <th><u>4&Pi;</u><br>3</th>
        <th><u>17&Pi;</u><br>12</th>
        <th><u>3&Pi;</u><br>2</th>
        <th><u>19&Pi;</u><br>12</th>
        <th><u>5&Pi;</u><br>3</th>
        <th><u>7&Pi;</u><br>4</th>
```

```
        <th><u>11&Pi;</u><br>6</th>
        <th><u>22&Pi;</u><br>12</th>
        <th>2&Pi;</th>
    </tr>

    <tr ALIGN = "CENTER">
        <th>Sin</th>
        <td>0</td>
        <td><u>&radic;3 - 1</u><br>2&radic;2</td>
        <td><u>1</u><br>2</td>
        <td><u>1</u><br>&radic;2</td>
        <td><u>&radic;3</u><br>2</td>
        <td><u>&radic;3 + 1</u><br>2&radic;2</td>
        <td>1</td>
        <td><u>&radic;3 + 1</u><br>2&radic;2</td>
        <td><u>&radic;3</u><br>3</td>
        <td><u>1</u><br>&radic;2</td>
        <td><u>1</u><br>2</td>
        <td><u>&radic;3 - 1</u><br>2&radic;2</td>
        <td>0</td>
        <td><u>1 - &radic;3</u><br>2&radic;2</td>
        <td><u>-1</u><br>2</td>
        <td><u>-1</u><br>&radic;2</td>
        <td><u>-&radic;3</u><br>2</td>
        <td><u>-&radic;3 - 1</u><br>2&radic;2</td>
        <td>-1</td>
        <td><u>- &radic;3 - 1</u><br>2&radic;2</td>
        <td><u>- &radic;3</u><br>2</td>
```

```
        <td><u>-1</u><br>&radic;2</td>
        <td><u>-1</u><br>2</td>
        <td><U>1 - &radic;3</U><br>2&radic;2</td>
        <td>0</td>
    </tr>

    <tr ALIGN = "CENTER">
        <th>Cos</th>
        <td>1</td>
        <td><u>&radic;3 + 1</u><br>2&radic;2</td>
        <td><u>&radic;3</u><br>2</td>
        <td><u>1</u><br>&radic;2</td>
        <td><u>1</u><br>2</td>
        <td><u>&radic;3 - 1</u><br>2&radic;2</td>
        <td>0</td>
        <td><u>1 - &radic;3</u><br>2&radic;2</td>
        <td><u>-1</u><br>2</td>
        <td><u>-1</u><br>&radic;2</td>
        <td><u>- &radic;3</u><br>2</td>
        <td><u>- &radic;3 - 1</u><br>2&radic;2</td>
        <td>-1</td>
        <td><u>- &radic;3 - 1</u><br>2&radic;2</td>
        <td><u>- &radic;3</u><br>2</td>
        <td><u>- 1</u><br>&radic;2</td>
        <td><u>- 1</u><br>2</td>
        <td><U>1 - &radic;3</U><br>2&radic;2</td>
        <td>0</td>
        <td><u>&radic;3 - 1</u><br>2&radic;2</td>
```

```
        <td><u>1</u><br>2</td>
        <td><u>1</u><br>&radic;2</td>
        <td><u>&radic;3</u><br>2</td>
        <td><u>&radic;3 + 1</u><br>2&radic;2</td>
        <td>1</td>
    </tr>

    <tr ALIGN = "CENTER">
        <th>Tan</th>
        <td>0</td>
        <TD>2 - &radic;3</TD>
        <td><u>1</u><br>&radic;3</td>
        <td>1</td>
        <td>&radic;3</td>
        <TD>2 + &radic;3</TD>
        <td>Not Defined</td>
        <TD>- 2 - &radic;3</TD>
        <td>- &radic;3</td>
        <td>- 1</td>
        <td><u>- 1</u><br>&radic;3</td>
        <TD>&radic;3 - 2</TD>
        <td>0</td>
        <TD>2 - &radic;3</TD>
        <td><u>1</u><br>&radic;3</td>
        <td>1</td>
        <td>&radic;3</td>
        <TD>2 + &radic;3</TD>
        <td>Not Defined</td>
```

```
    <TD>- 2 - &radic;3</TD>
    <td>- &radic;3</td>
    <td>- 1</td>
    <td><u>- 1</u><br>&radic;3</td>
    <TD>&radic;3 - 2</TD>
    <td>0</td>
</tr>

<TR ALIGN = "CENTER">
    <TH>Cot</TH>
    <td>Not Defined</td>
    <TD>2 + &radic;3</TD>
    <td>&radic;3</td>
    <td>1</td>
    <td><u>1</u><br>&radic;3</td>
    <TD>2 - &radic;3</TD>
    <td>0</td>
    <TD>&radic;3 - 2</TD>
    <td><u>- 1</u><br>&radic;3</td>
    <td>- 1</td>
    <td>- &radic;3</td>
    <TD>- 2 - &radic;3</TD>
    <td>Not Defined</td>
    <TD>2 + &radic;3</TD>
    <td>&radic;3</td>
    <td>1</td>
    <td><u>1</u><br>&radic;3</td>
    <TD>2 - &radic;3</TD>
```

```
    <td>0</td>
    <TD>&radic;3 - 2</TD>
    <td><u>- 1</u><br>&radic;3</td>
    <td>- 1</td>
    <td>- &radic;3</td>
    <TD>- 2 - &radic;3</TD>
    <td>Not Defined</td>
</TR>

<tr ALIGN = "CENTER">
    <th>Sec</th>
    <td>1</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td><u>2</u><br>&radic;3</td>
    <td>&radic;2</td>
    <td>2</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>Not Defined</td>
    <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
    <td>- 2</td>
    <td>- &radic;2</td>
    <td><u>- 2</u><br>&radic;3</td>
    <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
    <td>- 1</td>
    <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
    <td><u>- 2</u><br>&radic;3</td>
    <td>- &radic;2</td>
    <td>- 2</td>
```

```
    <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
    <td>Not Defined</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>2</td>
    <td>&radic;2</td>
    <td><u>2</u><br>&radic;3</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td>1</td>
</tr>

<TR ALIGN = "CENTER">
    <th>Cosec</th>
    <td>Not Defined</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>2</td>
    <td>&radic;2</td>
    <td><u>2</u><br>&radic;3</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td>1</td>
    <td><u>2&radic;2</u><br>&radic;3 + 1</td>
    <td><u>2</u><br>&radic;3</td>
    <td>&radic;2</td>
    <td>2</td>
    <td><u>2&radic;2</u><br>&radic;3 - 1</td>
    <td>Not Defined</td>
    <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
    <td>- 2</td>
    <td>- &radic;2</td>
```

```
        <td><u>- 2</u><br>&radic;3</td>
        <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
        <td>- 1</td>
        <td><u>- 2&radic;2</u><br>&radic;3 + 1</td>
        <td><u>- 2</u><br>&radic;3</td>
        <td>- &radic;2</td>
        <td>- 2</td>
        <td><u>- 2&radic;2</u><br>&radic;3 - 1</td>
        <td>Not Defined</td>
    </TR>
</table>

<!--Code of Graphs of trigonometric functions-->

<p>
<table ALIGN = "CENTER" border="1" bordercolor="black" height=20% ,width =70%
cellspacing = "1" cellpadding="20" BGCOLOR="WHITE">
    <caption><h2><em><u><b>GRAPHS OF TRIGONOMETRIC FUNCTIONS</u></em></h2></caption>

    <tr>
        <td><B>Function
        <td><B>Period
        <td><B>Domain
        <td><B>Range
        <td><B>Graph
    </tr>
```

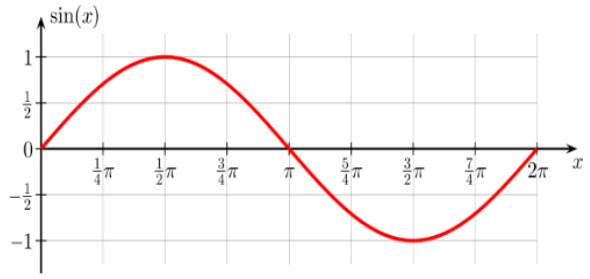
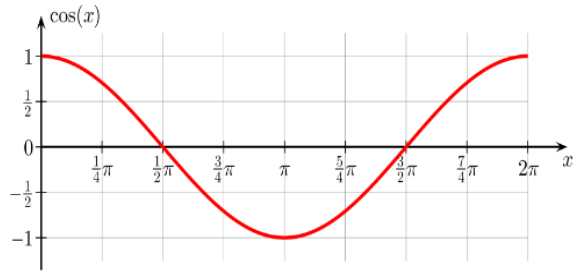
```
<tr>
    <td><b>Sine
    <td>2Π
    <td>(-&#8734,&#8734)
    <td>(-1,1)
    <td><img src = "24.png" width="400" height="200">


</tr>

<tr>
    <td><B>Cosine
    <td>2Π
    <td>(-&#8734,&#8734)
    <td>(-1,1)
    <td><img src = "cosine.png" width="400" height="200">
</tr>

<tr>
    <td><B>Tangent
    <td>Π
    <td>x &#8800 Π/2 + nΠ
    <td>(-&#8734,&#8734)
    <td><img src = "tangent.png" width="400" height="200">
</tr>

<tr>
    <td><B>Cotangent
```

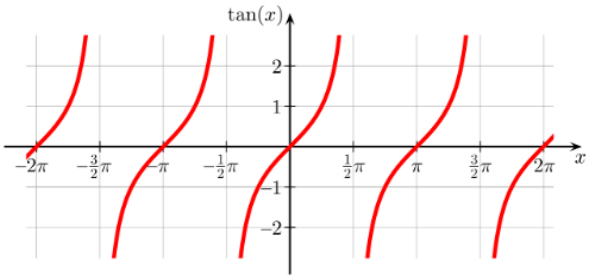
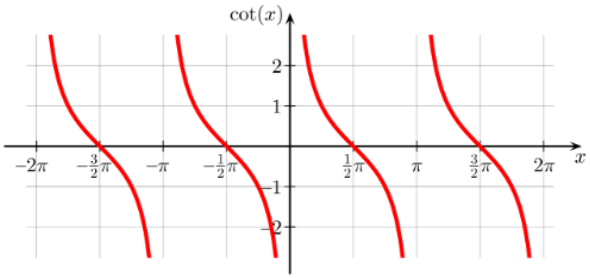
```
        <td>Π
        <td>x &#8800 nΠ
        <td>(-&#8734,&#8734)
        <td><img src = "Cotangent.png" width="400" height="200">
    </tr>

    <tr>
        <td><B>Secant
        <td>2Π
        <td>x &#8800 Π/2 + nΠ
        <td>(-&#8734,-1) U (1,&#8734)
        <td><img src = "Secant.png" width="400" height="200">
    </tr>

    <tr>
        <td><B>Cosecant
        <td>2Π
        <td>x &#8800 nΠ
        <td>(-&#8734,-1) U (1,&#8734)
        <td><img src = "Cosecant.png" width="400" height="200">
    </tr>

</table>

<!--Code for Getting more Information about Trigonometry-->
<p>For more Information about <u>TRIGONOMETRY</u> visit.<A
href="https://en.wikipedia.org/wiki/Trigonometry"> click here </A>
```

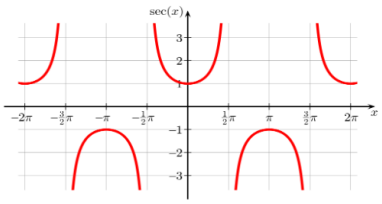
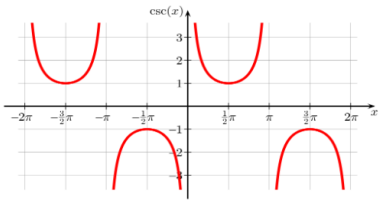
```
</body>


</html>
```

Output of 5th Part

GRAPHS OF TRIGONOMETRIC FUNCTIONS

Function	Period	Domain	Range	Graph
Sine	2Π	(-∞,∞)	(-1,1)	
Cosine	2Π	(-∞,∞)	(-1,1)	

Tangent	Π	x ≠ Π/2 + nΠ	(-∞,∞)	
Cotangent	Π	x ≠ nΠ	(-∞,∞)	

Secant	2Π	x ≠ Π/2 + nΠ	(-∞,-1) U (1,∞)	
Cosecant	2Π	x ≠ nΠ	(-∞,-1) U (1,∞)	

For more Information about TRIGONOMETRY visit. click here

For Viewing The Webpage Visit https://html2023r.github.io/trigonometry/ .

THANK YOU