 **7.2:**

 **Compound Angle Formulas**

* 3.2 explore the algebraic development of the compound angle formulas (e.g., verify the formulas in numerical examples, using technology; follow a demonstration of the algebraic development [student reproduction of the development of the general case is not required]), and use the formulas to determine exact values of trigonometric ratios [e.g., determining the exact value of sin ([pi]/12) by first rewriting it in terms of special angles as sin ([pi]/4 – [pi]/6)]

Special angles that we know the exact value for: Write with a **common denominator** to make working with them easier.

$π$/6, $π$/4, $π$/3, $π$/2, $π$, 2$π$ \_\_\_\_\_ , \_\_\_\_\_\_, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, \_\_\_\_\_

Then find all other related special angles.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 **°** | 30**°** | 45**°** | 60**°** | 90**°** |  |  |  | 180**°** |  |  |  | 270**°** |  |  |  | 360**°** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Example 1:** Find the exact value of sin 75˚ Find the exact value of sin(5$π$/12)

**Example 2:** Find the exact value of cos 15˚ Find the exact value of cos($π$/12)

**Example 3:** Find the exact value of tan(-15˚) Find the exact value of tan(-$π$/12)

**Example 4:** Find the exact value of $ Sin (19 π/ 12)$.

Sin (285**°)**= sin (240**°** + 45**°)**

$$Sin (19 π/ 12) = Sin (4π/3 +π/4)$$

**Example 5:** Evaluate $sin (a + b)$ where $a$ and $b$ are obtuse angles;$ sin a =\frac{4}{5} $ and $\sin(b=\frac{6}{7})$

**Example 6:** Use compound angle formulas to show that $sinx = -sin\left(2π-x\right)$

**Example 7:** Simplify cos(5 $π$/12)cos($π$/12)+sin(5 $π$/12)sin($π$/12)