DPP – 01

1. If $\sin\alpha = \frac{3}{5}$ and $\cos\beta = \frac{9}{41}$, find the value of $\sin(\alpha - \beta)$ and $\cos(\alpha + \beta)$.

2. If $\sin\alpha = \frac{15}{53}$ and $\sin\beta = \frac{33}{65}$, find the values of $\sin(\alpha - \beta)$ and $\sin(\alpha + \beta)$.

3. If $\sin\alpha = \frac{15}{17}$ and $\cos\beta = \frac{12}{13}$, find the values of $\sin(\alpha + \beta)$, $\cos(\alpha - \beta)$, and $\tan(\alpha + \beta)$.

4. Prove that $\cos(45° - A)\cos(45° - B) - \sin(45° - A)\sin(45° - B) = \sin(A + B)$

5. Prove that $\sin(45° + A)\cos(45° - B) + \cos(45° + A)\sin(45° - B) = \cos(A - B)$

6. $\frac{\sin(A-B)}{\cos A \cos B} + \frac{\sin(B-C)}{\cos B \cos C} + \frac{\sin(C-A)}{\cos C \cos A} = 0$

7. $\sin 105° + \cos 105° = \cos 45°$

8. $\sin 75° - \sin 15° = \cos 105° + \cos 15°$

9. $\cos\alpha\cos(\gamma - \alpha) - \sin\alpha\sin(\gamma - \alpha) = \cos\gamma$

10. $\cos(\alpha + \beta)\cos\gamma - \cos(\beta + \gamma)\cos\alpha = \sin\beta\sin(\gamma - \alpha)$

11. $\sin(n + 1)A\sin(n - 1)A + \cos(n + 1)A\cos(n - 1)A = \cos 2A$

12. $\sin(n + 1)A\sin(n + 2)A + \cos(n + 1)A\cos(n + 2)A = \cos A$

Answer Key

1. $-\frac{133}{205}; -\frac{84}{205}$ **2.** $\frac{1596}{3445}; \frac{3444}{3445}$ **3.** $\frac{220}{221}; \frac{171}{221}; \frac{220}{21}$