

**Formulas Double Angles and Half Angles 2** – in book: Section 12.6 p. 771

Use the information given about the angle  $\theta$ , to find the exact value of the indicated trigonometric function.

1)  $\cos \theta = -\frac{3}{5}$ ,  $\sin \theta > 0$

Find  $\cos \frac{\theta}{2}$ .

2)  $\cos \theta = \frac{1}{4}$ ,  $\csc \theta > 0$

Find  $\sin \frac{\theta}{2}$ .

3)  $\sin \theta = -\frac{4}{5}$ ,  $\theta$  in quadrant IV Find  $\sin 2\theta$ .

4)  $\sin \theta = -\frac{4}{5}$ ,  $\theta$  in quadrant IV Find  $\cos 2\theta$ .

5)  $\cos \theta = -\frac{5}{13}$ ,  $\theta$  in quadrant II Find  $\cos 2\theta$ .

Find the exact value by using a half-angle identity.

6)  $\sin 22.5^\circ$

Find the exact value of the expression without using a calculator.

8)  $\sin 10^\circ \cos 50^\circ + \cos 10^\circ \sin 50^\circ$

7)  $\cos 165^\circ$

9)  $\sin 115^\circ \cos 55^\circ - \cos 115^\circ \sin 55^\circ$

Find the exact value under the given conditions.

10) Given  $\sin \alpha = -\frac{20}{29}$ , with  $\alpha$  in quadrant IV, and  $\tan \beta = -\frac{15}{8}$ , with  $\beta$  in quadrant II.

Find  $\cos(\alpha + \beta)$ .

11) Given  $\sin \alpha = \frac{24}{25}$ , with  $\alpha$  in quadrant II, and  $\cos \beta = \frac{3}{5}$ , with  $\beta$  in quadrant I.

Find  $\sin(\alpha - \beta)$ .

Find the exact value of the expression.

12)  $\cos(60^\circ - 45^\circ)$