

Classroom Voting Questions: Precalculus

The Sum, Difference, Double, and Half Angle Formulas

- $\sin(90^\circ) = \sin(30^\circ) + \sin(60^\circ)$
 - True, and I am very confident.
 - True, but I am not very confident.
 - False, but I am not very confident.
 - False, and I am very confident.
- $\cos(30^\circ) = \cos(90^\circ) - \cos(60^\circ)$
 - True, and I am very confident.
 - True, but I am not very confident.
 - False, but I am not very confident.
 - False, and I am very confident.
- $\tan(120^\circ) = \tan(90^\circ) + \tan(30^\circ)$
 - True, and I am very confident.
 - True, but I am not very confident.
 - False, but I am not very confident.
 - False, and I am very confident.
- Use the fact that $60^\circ + 45^\circ = 105^\circ$ to calculate $\cos 105^\circ$.
 - $\frac{\sqrt{2} - \sqrt{6}}{4}$
 - $\frac{\sqrt{6} - \sqrt{2}}{4}$
 - $\frac{\sqrt{6} + \sqrt{2}}{4}$
 - $-\frac{1}{2}$

5. Use the sum and difference formulas to calculate $\cos(57^\circ)\cos(22^\circ) - \sin(57^\circ)\sin(22^\circ)$.

- (a) $\cos(35^\circ)$
- (b) $\sin(35^\circ)$
- (c) $\cos(79^\circ)$
- (d) $\sin(79^\circ)$

6. Use the sum and difference formulas to calculate $\sin(44^\circ)\cos(19^\circ) - \cos(44^\circ)\sin(19^\circ)$.

- (a) $\cos(63^\circ)$
- (b) $\sin(63^\circ)$
- (c) $\cos(25^\circ)$
- (d) $\sin(25^\circ)$

7. Suppose $\cos \alpha = \frac{3}{5}$ and $\sin \beta = \frac{5}{13}$, where α is in quadrant I and β is in quadrant II. Find $\sin(\alpha + \beta)$.

- (a) $-\frac{33}{65}$
- (b) $-\frac{56}{65}$
- (c) $-\frac{58}{65}$
- (d) Not enough information is given.

8. Find a simpler form for $\cos\left(\theta - \frac{3\pi}{2}\right)$.

- (a) $\sin \theta$
- (b) $-\sin \theta$
- (c) $\cos \theta$
- (d) $-\cos \theta$

9. Use the sum and difference formulas to calculate $\frac{\tan\left(\frac{\pi}{3}\right) - \tan\left(\frac{\pi}{4}\right)}{1 + \tan\left(\frac{\pi}{3}\right)\tan\left(\frac{\pi}{4}\right)}$.

- (a) $\tan\left(\frac{\pi}{12}\right)$

(b) $\tan\left(\frac{7\pi}{12}\right)$

(c) $\tan\left(\frac{\pi}{7}\right)$

(d) $\tan(\pi)$

10. $\sin(90^\circ) = 2 \sin(45^\circ)$

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.

11. $\cos(120^\circ) = 2 \cos(60^\circ)$

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.

12. $\tan(60^\circ) = 2 \tan(30^\circ)$

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.

13. Using the double angle formulas, $2 \sin(12^\circ) \cos(12^\circ) =$

(a) $\sin(6^\circ)$

(b) $\sin(24^\circ)$

(c) $\cos(6^\circ)$

(d) $\cos(24^\circ)$

14. $\cos 2\theta =$

(a) $2 \cos \theta$

- (b) $2 \sin \theta \cos \theta$
- (c) $\cos^2 \theta + \sin^2 \theta$
- (d) $2 \cos^2 \theta - 1$

15. Using the double angle formulas, $1 - 2 \sin^2(40^\circ) =$

- (a) $\sin(80^\circ)$
- (b) $\sin(20^\circ)$
- (c) $\cos(80^\circ)$
- (d) $\cos(20^\circ)$

16. $\sin(30^\circ) = \frac{1}{2} \sin(60^\circ)$

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

17. $\cos(45^\circ) = \frac{1}{2} \cos(90^\circ)$

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

18. $\tan(90^\circ) = \frac{1}{2} \tan(180^\circ)$

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

19. Use the half angle formulas to calculate $\sin\left(\frac{\pi}{8}\right)$.

$$(a) \sqrt{\frac{1 - \cos\left(\frac{\pi}{8}\right)}{2}}$$

$$(b) \sqrt{\frac{1 + \cos\left(\frac{\pi}{8}\right)}{2}}$$

$$(c) \sqrt{\frac{1 - \cos\left(\frac{\pi}{4}\right)}{2}}$$

$$(d) \sqrt{\frac{1 - \cos\left(\frac{\pi}{16}\right)}{2}}$$

20. Use a half-angle formula to calculate $\cos\left(\frac{5\pi}{8}\right)$.

$$(a) \sqrt{\frac{1 + \cos\frac{5\pi}{16}}{2}}$$

$$(b) -\sqrt{\frac{1 + \cos\frac{5\pi}{16}}{2}}$$

$$(c) \sqrt{\frac{1 + \cos\frac{5\pi}{4}}{2}}$$

$$(d) -\sqrt{\frac{1 + \cos\frac{5\pi}{4}}{2}}$$