6.2 Trigonometry short version

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find the exact value of the expression.

1) $\cos\left[\dfrac{7\pi}{12} - \dfrac{5\pi}{12}\right]$

1) _____

Identify α and β in the following expression which is the right side of the formula for cos (α – β).

2) $\cos (175°) \cos (55°) + \sin (175°) \sin (55°)$

2) _____

Write the expression as the cosine of an angle, knowing that the expression is the right side of the formula for cos (α – β) with particular values for α and β.

3) $\cos\left(\dfrac{5\pi}{12}\right) \cos\left(\dfrac{\pi}{4}\right) + \sin\left(\dfrac{5\pi}{12}\right) \sin\left(\dfrac{\pi}{4}\right)$

3) _____

Find the exact value of the expression.

4) $\cos (170°) \cos (50°) + \sin (170°) \sin (50°)$

4) _____

Complete the identity.

5) $\dfrac{\cos (\alpha - \beta)}{\sin \alpha \sin \beta} = ?$

5) _____

6) $\cos\left(x - \dfrac{5\pi}{6}\right) = ?$

6) _____

Use the given information to find the exact value of the expression.

7) $\sin \alpha = \dfrac{24}{25}$, α lies in quadrant II, and $\cos \beta = \dfrac{2}{5}$, β lies in quadrant I   Find $\cos (\alpha - \beta)$.

7) _____

Find the exact value by using a sum or difference identity.

8) $\sin 75°$

8) _____

9) $\cos (135° + 30°)$

9) _____

Find the exact value of the expression.

10) $\sin 265° \cos 25° - \cos 265° \sin 25°$

10) _____

11) $\cos 20° \cos 40° - \sin 20° \sin 40°$

11) _____

12) $\cos \dfrac{5\pi}{18} \sin \dfrac{\pi}{9} - \cos \dfrac{\pi}{9} \sin \dfrac{5\pi}{18}$

12) _____

Find the exact value by using a sum or difference identity.

13) $\sin 165°$

13) _____

Complete the identity.

14) $\cos (\alpha + \beta) \cos (\alpha - \beta) = ?$

14) _____

15) $\dfrac{\cos (\alpha - \beta)}{\cos (\alpha + \beta)} = ?$

15) _____

Verify the identity.

16) $\cos\left(x + \dfrac{\pi}{2}\right) = -\sin x$

16) _____

17) $\cos(\alpha - \beta) - \cos(\alpha + \beta) = 2 \sin \alpha \sin \beta$

17) _____

18) $\dfrac{\cos(\alpha + \beta)}{\cos \alpha \sin \beta} = \cot \beta - \tan \alpha$

18) _____

Use the given information to find the exact value of the expression.

19) $\sin \alpha = -\dfrac{4}{5}$, α lies in quadrant IV, and $\cos \beta = -\dfrac{\sqrt{21}}{5}$, β lies in quadrant III   Find $\sin (\alpha - \beta)$.

19) _____

20) $\cos \alpha = -\dfrac{4}{5}$, α lies in quadrant III, and $\sin \beta = \dfrac{\sqrt{21}}{5}$, β lies in quadrant II   Find $\cos (\alpha + \beta)$.

20) _____

Find the exact value by using a difference identity.

21) $\tan 105°$

21) _____

Use trigonometric identities to find the exact value.

22) $\dfrac{\tan 70° - \tan (-50°)}{1 + \tan 70° \tan (-50°)}$

22) _____

Find the exact value under the given conditions.

23) $\cos \alpha = -\dfrac{7}{25}$, $\dfrac{\pi}{2} < \alpha < \pi$; $\sin \beta = -\dfrac{\sqrt{21}}{5}$, $\pi < \beta < \dfrac{3\pi}{2}$ Find $\tan (\alpha + \beta)$.

23) _____

Verify the identity.

24) $\tan\left(x - \dfrac{\pi}{4}\right) = \dfrac{\tan x - 1}{1 + \tan x}$

24) _____

Rewrite the expression as a simplified expression containing one term.

25) $\sin\left(\dfrac{-11\pi}{6} - \alpha\right) \cos\left(\dfrac{-11\pi}{6} + \alpha\right) + \cos\left(\dfrac{-11\pi}{6} - \alpha\right) \sin\left(\dfrac{-11\pi}{6} + \alpha\right)$

25) _____

1) $\dfrac{\sqrt{3}}{2}$

2) $\alpha = 175°,\ \beta = 55°$

3) $\cos\left(\dfrac{\pi}{6}\right)$

4) $-\dfrac{1}{2}$

5) $\cot \alpha \cot \beta + 1$

6) $\dfrac{1}{2}(-\sqrt{3}\cos x + \sin x)$

7) $\dfrac{-14 + 24\sqrt{21}}{125}$

8) $\dfrac{\sqrt{2}(\sqrt{3}+1)}{4}$

9) $-\dfrac{\sqrt{2}(\sqrt{3}+1)}{4}$

10) $-\dfrac{\sqrt{3}}{2}$

11) $\dfrac{1}{2}$

12) $\dfrac{1}{2}$

13) $\dfrac{\sqrt{2}(\sqrt{3}-1)}{4}$

14) $\cos^2 \beta - \sin^2 \alpha$

15) $\dfrac{1 + \tan \alpha \tan \beta}{1 - \tan \alpha \tan \beta}$

16) $\cos\left(x + \dfrac{\pi}{2}\right) = \cos x \cos \dfrac{\pi}{2} - \sin x \sin \dfrac{\pi}{2} = (\cos x)(0) - (\sin x)(1) = -\sin x.$

17) $\cos(\alpha - \beta) - \cos(\alpha + \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta - (\cos \alpha \cos \beta - \sin \alpha \sin \beta) = 2 \sin \alpha \sin \beta.$

18) $\dfrac{\cos(\alpha + \beta)}{\cos \alpha \sin \beta} = \dfrac{\cos \alpha \cos \beta - \sin \alpha \sin \beta}{\cos \alpha \sin \beta} = \dfrac{\cos \alpha \cos \beta}{\cos \alpha \sin \beta} - \dfrac{\sin \alpha \sin \beta}{\cos \alpha \sin \beta} = \dfrac{\cos \beta}{\sin \beta} - \dfrac{\sin \alpha}{\cos \alpha} = \cot \beta - \tan \alpha$

19) $\dfrac{6 + 4\sqrt{21}}{25}$

20) $\dfrac{8 + 3\sqrt{21}}{25}$

21) $-2 - \sqrt{3}$

22) $-\sqrt{3}$

23) $\dfrac{-48 + 7\sqrt{21}}{14 + 24\sqrt{21}}$

24) $\tan\left(x - \dfrac{\pi}{4}\right) = \dfrac{\tan x - \tan \pi/4}{1 + (\tan x)(\tan \pi/4)} = \dfrac{\tan x - 1}{1 + \tan x}$.

25) $\dfrac{\sqrt{3}}{2}$