M141
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Worksheet for 3.5 and 3.6

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Use the information given about the angle θ, $0 \le \theta \le 2\pi$, to find the exact value of the indicated trigonometric function.

1) $\sin \theta = \dfrac{5}{13}$, $0 < \theta < \dfrac{\pi}{2}$ Find $\cos(2\theta)$.   1) _____

A) $\dfrac{118}{169}$ B) $\dfrac{119}{169}$ C) $-\dfrac{119}{169}$ D) $\dfrac{120}{169}$

2) $\csc \theta = \dfrac{17}{15}$, $\dfrac{\pi}{2} < \theta < \pi$ Find $\cos(2\theta)$.   2) _____

A) $-\dfrac{161}{289}$ B) $\dfrac{161}{289}$ C) $\dfrac{240}{289}$ D) $-\dfrac{240}{289}$

3) $\sin \theta = -\dfrac{4}{5}$, $\dfrac{3\pi}{2} < \theta < 2\pi$ Find $\tan(2\theta)$.   3) _____

A) $-\dfrac{7}{24}$ B) $\dfrac{7}{24}$ C) $-\dfrac{24}{7}$ D) $\dfrac{24}{7}$

4) $\cos 2\theta = -\dfrac{24}{25}$, $\dfrac{\pi}{2} < 2\theta < \pi$ Find $\sin \theta$.   4) _____

A) $\dfrac{7}{5}$ B) $\dfrac{7\sqrt{2}}{10}$ C) $-\dfrac{7\sqrt{2}}{10}$ D) $-\dfrac{7}{5}$

Find the exact value of the expression.

5) $\sin\left(2 \cos^{-1} \dfrac{\sqrt{3}}{2}\right)$ 5) _____

A) $-\dfrac{\sqrt{3}}{2}$ B) $\sqrt{3}$ C) $\dfrac{\sqrt{3}}{2}$ D) $\dfrac{1}{2}$

Establish the identity.

6) $\left(\cos \dfrac{x}{2} - \sin \dfrac{x}{2}\right)^2 = 1 - \sin x$ 6) _____

Use the information given about the angle θ, $0 \le \theta \le 2\pi$, to find the exact value of the indicated trigonometric function.

7) $\sin \theta = \dfrac{1}{4}$, $0 < \theta < \dfrac{\pi}{2}$ Find $\sin \dfrac{\theta}{2}$.   7) _____

A) $\dfrac{\sqrt{6}}{4}$ B) $\dfrac{\sqrt{8 - 2\sqrt{15}}}{4}$ C) $\dfrac{\sqrt{8 + 2\sqrt{15}}}{4}$ D) $\dfrac{\sqrt{10}}{4}$

8) $\sec \theta = 4$, $0 < \theta < \dfrac{\pi}{2}$ Find $\cos \dfrac{\theta}{2}$.   8) _____

A) $\dfrac{\sqrt{6}}{4}$ B) $\dfrac{\sqrt{8 - 2\sqrt{15}}}{4}$ C) $\dfrac{\sqrt{10}}{4}$ D) $\dfrac{\sqrt{8 + 2\sqrt{15}}}{4}$

Use the Half-angle Formulas to find the exact value of the trigonometric function.

9) $\cos 22.5°$

    A) $-\frac{1}{2}\sqrt{2-\sqrt{2}}$ B) $\frac{1}{2}\sqrt{2-\sqrt{2}}$ C) $\frac{1}{2}\sqrt{2+\sqrt{2}}$ D) $-\frac{1}{2}\sqrt{2+\sqrt{2}}$

9) _____

10) $\sin\frac{7\pi}{8}$

    A) $-\frac{1}{2}\sqrt{2-\sqrt{2}}$ B) $-\frac{1}{2}\sqrt{2-\sqrt{3}}$ C) $\frac{1}{2}\sqrt{2-\sqrt{2}}$ D) $\frac{1}{2}\sqrt{1-\sqrt{2}}$

10) _____

Express the product as a sum containing only sines or cosines.

11) $\cos(4\theta)\cos(3\theta)$

    A) $\frac{1}{2}[\cos\theta + \cos(7\theta)]$ B) $\frac{1}{2}[\cos(7\theta) - \cos\theta]$

    C) $\frac{1}{2}[\cos(7\theta) - \sin\theta]$ D) $\cos^2(12\theta^2)$

11) _____

Express the sum or difference as a product of sines and/or cosines.

12) $\sin(2\theta) - \sin(4\theta)$

    A) $-2\sin\theta\cos(3\theta)$ B) $2\cos(2\theta)\cos(3\theta)$

    C) $-2\sin\theta$ D) $2\sin(3\theta)\cos\theta$

12) _____

13) $\cos\frac{5\theta}{2} + \cos\frac{3\theta}{2}$

    A) $2\cos(2\theta)\cos\frac{\theta}{2}$ B) $2\cos(2\theta)$ C) $2\sin(2\theta)\sin\frac{\theta}{2}$ D) $2\sin(2\theta)\sin\theta$

13) _____

Establish the identity.

14) $\dfrac{\cos(7\theta) - \cos(3\theta)}{2\sin(5\theta)} = -\sin(2\theta)$

14) _____

15) $\dfrac{\sin\alpha - \sin\beta}{\sin\alpha + \sin\beta} = \cot\dfrac{\alpha - \beta}{2}$

15) _____