Precalculus (Math 1) HW Set #9.

Due Wednesday, April 29th.

In order to receive a ✓, you must attempt all problems and write out all steps leading to your answers neatly and legibly. You cannot simply write the correct answer to demonstrate your mathematical understanding.

You must include your name, the course title and section number on the first page. All homework sets must be stapled. No late homework will be accepted without my express permission. You may receive a ✗ if these guidelines are not followed.

Good luck!

Find the amplitude, period or phase shift.

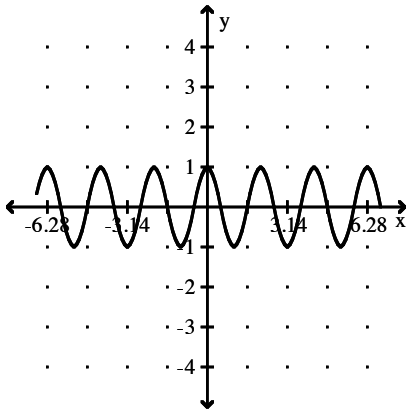
1) Find the amplitude of $y = 3\cos\left(2x + \frac{\pi}{3}\right)$. 1) _____

2) Find the period of $y = -2\sin\left(4x + \frac{\pi}{2}\right)$. 2) _____

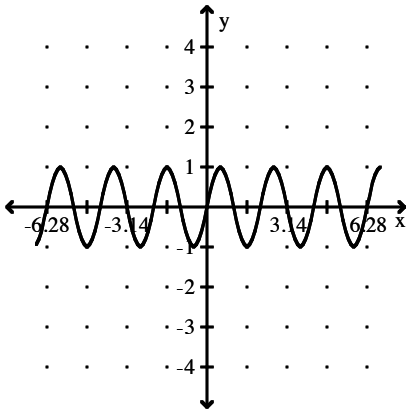
Match the function with its graph.

3) 1) $y = \sin 3x$ 2) $y = 3\cos x$ 3) _____
3) $y = 3\sin x$ 4) $y = \cos 3x$

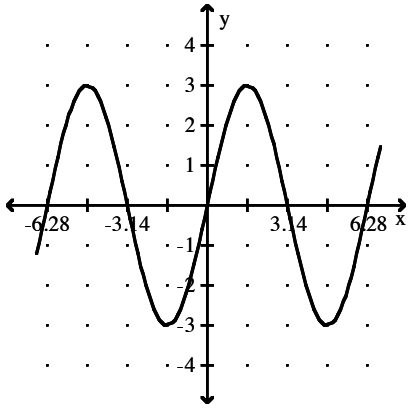
A)



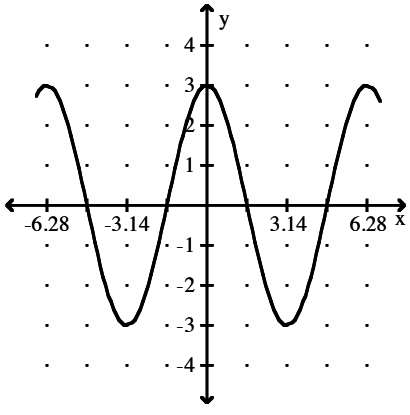
B)



C)



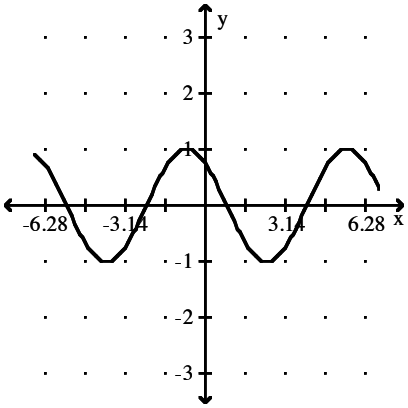
D)



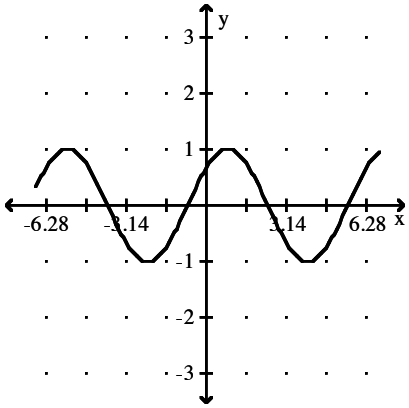
4) 1) $y = \sin\left(x - \frac{\pi}{4}\right)$ 2) $y = \cos\left(x + \frac{\pi}{4}\right)$ 4) _____

3) $y = \sin\left(x + \frac{\pi}{4}\right)$ 4) $y = \cos\left(x - \frac{\pi}{4}\right)$

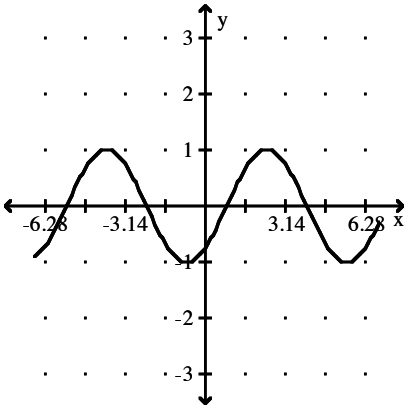
A)



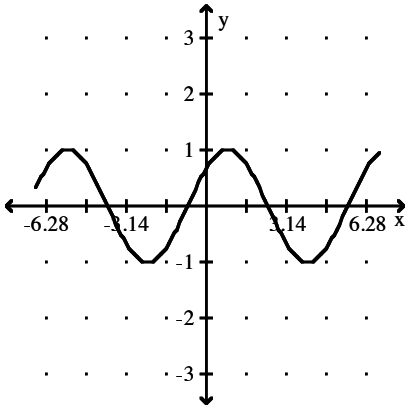
B)



C)



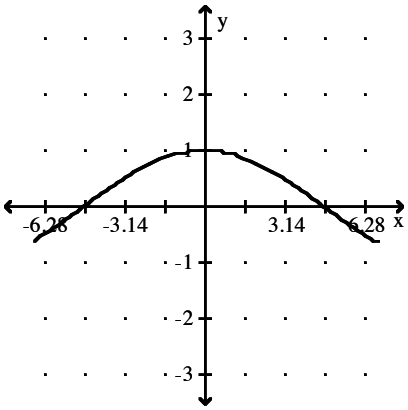
D)



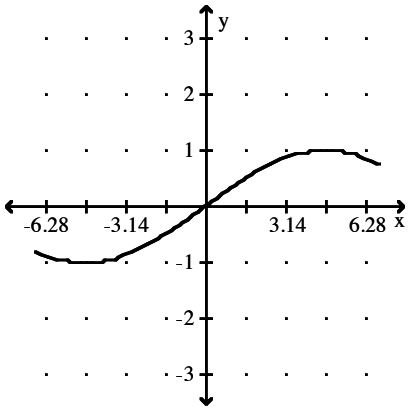
5) 1) $y = \sin\frac{1}{3}x$ 2) $y = \frac{1}{3}\cos x$ 5) _____

3) $y = \frac{1}{3}\sin x$ 4) $y = \cos\frac{1}{3}x$

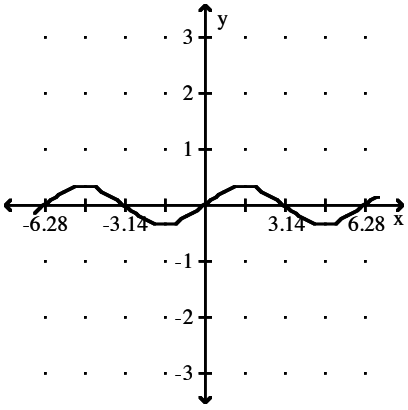
A)



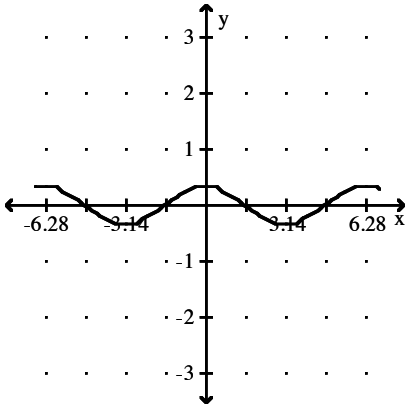
B)



C)



D)



Evaluate the expression using the provided information.

6) Find the exact value of $\cos(\theta + \phi)$ given that $\cos\theta = \frac{5}{13}$ and $\cos\phi = \frac{4}{5}$ and that θ and ϕ are between 0 and $\frac{\pi}{2}$. 6) _____

7) Find the exact value of $\tan(\theta + \phi)$ given that $\sin\theta = \frac{3}{5}$ and $\sin\phi = \frac{12}{13}$ and that θ and ϕ are between 0 and $\frac{\pi}{2}$. 7) _____

8) Find the exact value of $\tan(\theta + \phi)$ given that $\sin\theta = \frac{3}{5}$ and $\sin\phi = \frac{5}{13}$ and that θ and ϕ are between 0 and $\frac{\pi}{2}$. 8) _____

Find the exact value.

9) Given that $\sin\theta = -\frac{4}{5}$ with θ in quadrant IV, find $\sin 2\theta$. 9) _____

10) Given that $\sin\theta = -\frac{4}{5}$ with θ in quadrant IV, find $\cos 2\theta$. 10) _____

11) Given that $\tan\theta = \frac{7}{24}$ with θ in quadrant III, find $\sin 2\theta$. 11) _____

Find the exact value in radians.

12) $\cos^{-1}\frac{\sqrt{3}}{2}$ 12) _____

13) $\sin^{-1}\left(-\frac{1}{2}\right)$ 13) _____

14) $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ 14) _____

15) $\tan^{-1}\frac{\sqrt{3}}{3}$ 15) _____

Evaluate exactly.

16) $\cos(\tan^{-1}\sqrt{3})$ 16) _____

Multiply and simplify using a Pythagorea identity.

17) $(\cos x - \sin x)^2$ 17) _____

18) $(1 + \cot\theta)^2$ 18) _____

19) $(1 - \cos x)(1 + \cos x)$ 19) _____

Use the sum and difference identities to evaluate exactly.

20) $\sin 15°$ 20) _____

21) $\tan 75°$ 21) _____

22) $\sin 75°$ 22) _____

23) $\cos 105°$ 23) _____

1) 3

2) $\frac{\pi}{2}$

3) 1B, 2D, 3C, 4A

4) 1C, 2A, 3B, 4D

5) 1B, 2D, 3C, 4A

6) $-\frac{16}{65}$

7) $-\frac{63}{16}$

8) $\frac{56}{33}$

9) $-\frac{24}{25}$

10) $-\frac{7}{25}$

11) $\frac{336}{625}$

12) $\frac{\pi}{6}$

13) $-\frac{\pi}{6}$

14) $\frac{3\pi}{4}$

15) $\frac{\pi}{6}$

16) $\frac{1}{2}$

17) $1 - 2 \sin x \cos x$

18) $\csc^2 \theta + 2 \cot \theta$

19) $\sin^2 x$

20) $\frac{\sqrt{2}(\sqrt{3} - 1)}{4}$

21) $\sqrt{3} + 2$

22) $\frac{\sqrt{2} + \sqrt{6}}{4}$

23) $\frac{\sqrt{2} - \sqrt{6}}{4}$