Quiz18, MAT 1375 Professor Chiu

ID:_____ Name:_____

- This quiz consists of 4 sets of questions for a total of 20 points.
- You have 15 minutes to complete the quiz.
- Wishing you success.

1. Find the trigonometric function values by using the addition and subtraction formulas.

a) $\sin(75°) = \sin(30° + 45°) = \sin(30°)\cos(45°) + \cos(30°)\sin(45°)$

$= \frac{1}{2}\cdot\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2}\cdot\frac{\sqrt{2}}{2}$

$= \frac{\sqrt{2}}{4} + \frac{\sqrt{6}}{4} = \frac{\sqrt{2}+\sqrt{6}}{4}$

b) $\cos(15°) = \cos(60° - 45°) = \cos(60°)\cos(45°) + \sin(60°)\sin(45°)$

$= \frac{1}{2}\cdot\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2}\cdot\frac{\sqrt{2}}{2}$

$= \frac{\sqrt{2}}{4} + \frac{\sqrt{6}}{4} = \frac{\sqrt{2}+\sqrt{6}}{4}$

2. Find the amplitude, period, and phase shift of the function: $y = 3\cos(2x + \pi)$.

amplitude: 3 period: $\frac{2\pi}{2} = \pi$ phase shift: $-\frac{\pi}{2}$

$= 3\cos\left(2\cdot\left(x + \frac{\pi}{2}\right)\right)$

3. Find the value of the given inverse sine functions: $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$.

Let $\theta = \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) \iff \sin(\theta) = -\frac{\sqrt{3}}{2}$

$\left(-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}\right)$

$\theta = -\frac{\pi}{3}$ or $-60°$

4. Complete the chart of the unit circle: quadrants, radian, and the coordinates representing $(\cos(\theta), \sin(\theta))$.