BRONX COMMUNITY COLLEGE
of The City University of New York

DEPARTMENT OF MATHEMATICS and COMPUTER SCIENCE

MATH 30

Review of Chapters 4-5

1. Convert to radians. Express your answer as multiple of π.

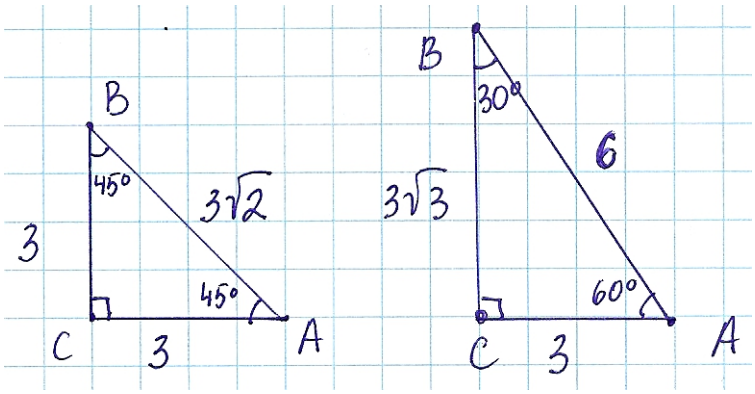
   (a) $135°$ **(b)** $345°$

2. Convert radians to degrees.

   (a) $\frac{11\pi}{9}$ radians **(b)** $-\frac{4\pi}{9}$ radians

3. If $\sin\theta = \frac{2}{5}$, and $0 \le \theta \le 90°$, find the remaining trigonometric functions (without using a calculator). Simplify your answer, rationalize denominator if needed (i.e. there should be no radicals in the denominator).

4. Use triangles to find the exact value of each expression without using a calculator.



   a) $\cos 45° \cdot \sin 60° - \tan 30° \cdot \cot 30°$

   b) $\cos^2 \frac{\pi}{6} - \sec^2 \frac{\pi}{4}$

5. Find the reference angle for each of the angles.

   a) $607°$ **b)** $-\frac{13\pi}{3}$

   c) $437°$ **d)** $\frac{17\pi}{5}$

6. Find the exact value of each expression. Do not use calculator. Use reference angles, properties of odd and even functions, tables.

a) $\cos 240^\circ$ **b)** $\tan(-\frac{\pi}{6})$ **c)** $\sec(-\frac{2\pi}{3})$ **(d)** $\sin(-\frac{11\pi}{6})$

e) $\tan 240^\circ$ **f)** $\sin(-\frac{\pi}{6})$ **g)** $\csc(-\frac{5\pi}{6})$ **h)** $\cos(\frac{21\pi}{6})$

7. Determine the amplitude, the period, and the phase shift of each function, then graph one period of the function.

(a) $y = 3\sin(3x - \frac{3\pi}{4})$ **(b)** $y = -\frac{1}{2}\cos(2x + \frac{\pi}{2})$

8. Find the exact value of each expression. Do not use a calculator.

a) $\cos^{-1}(\frac{\sqrt{2}}{2})$ **b)** $\sin(\tan^{-1}(\sqrt{3}))$ **c)** $\sin^{-1}(\cos\frac{\pi}{6})$

d) $\sin^{-1}(\frac{\sqrt{2}}{2})$ **e)** $\cos(\cot^{-1}(\sqrt{3}))$ **f)** $\cos^{-1}(\sin\frac{\pi}{6})$

g) $\sin(60^o - 45^o)$ **h)** $\tan(\frac{\pi}{3} + \frac{\pi}{4})$ **i)** $\cos(120^o)$

9. Verify the given identities

(a) $\cot x \sec x \sin x = 1$ **(b)** $\cos t \cot t = \dfrac{1 - \sin^2 t}{\sin t}$

(c) $\cos(x + \frac{}{2}) = \sin x$

10. Solve the given equations for x from interval $[0, 2\pi)$

(a) $\sin 3x = -\dfrac{\sqrt{2}}{2}$ **(b)** $7\cos\theta + 9 = -2\cos\theta$ **(c)** $3\tan^2 x - 9 = 0$