King Fahd University of Petroleum and Minerals
Faculty of Science – Math Prep Year program
Math 002 -042
Quiz #4

Name: **Sr#:** ID: Sec.:

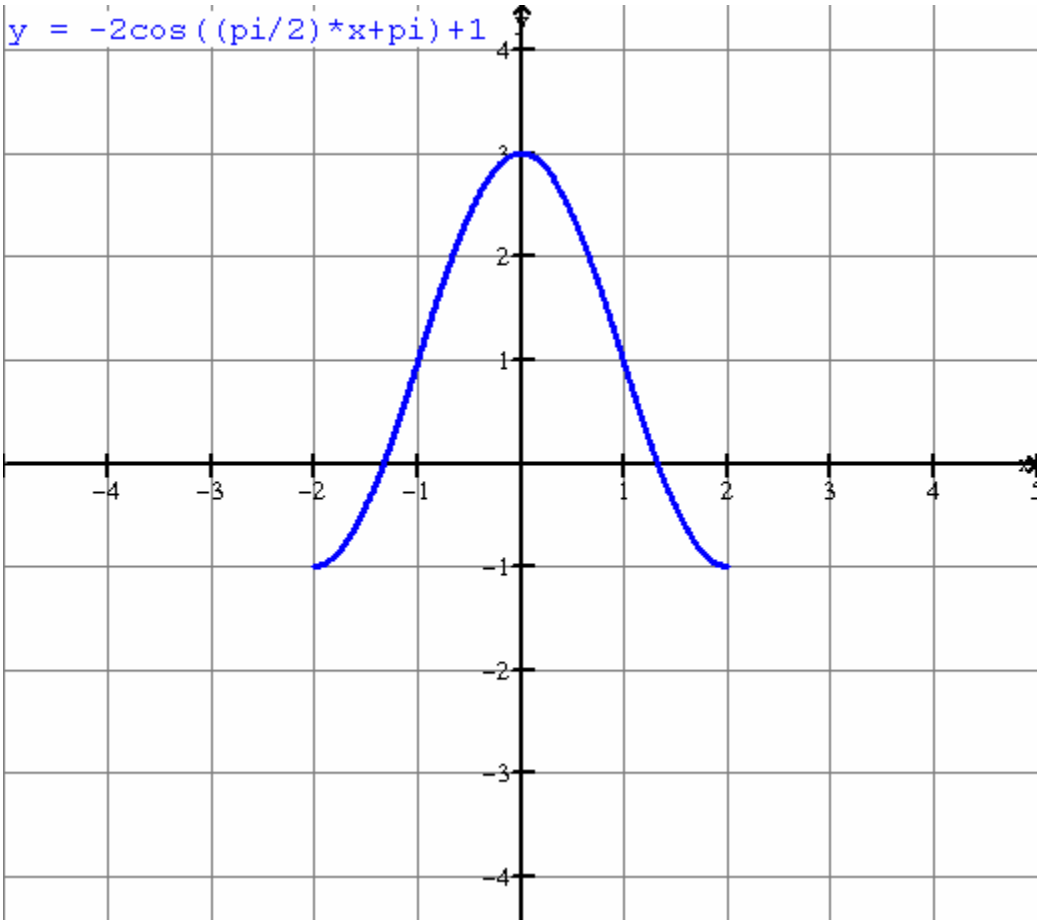
Question1

For the function $y = -2\cos(\frac{\pi}{2}x + \pi) + 1$

a) Complete the following table (write the rule when that necessary). **(3 pts)**

the period	the phase shift	the range
$P = \frac{2\pi}{\frac{\pi}{2}} = 4$	$\frac{\pi}{2}x + \pi = 0$ $x = -2$ $\therefore$ 2 units to the left	$R = [-\lvert a\rvert + d, \lvert a\rvert + d\,]$ $= [-2+1, 2+1]$ $= [-1, 3]$

b) Graph the function over one complete period **(4 pts)**



Question2 **(4 pts)**

Given $\sin\alpha = \frac{4}{5}, \alpha$ in quadrant II, and $\sin(\frac{\pi}{2} - \beta) = -\frac{12}{13}, \beta$ in quadrant II, find $\sec(\alpha + \beta)$.

Solution:

$$\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$$
$$= (-\frac{3}{5}) \times (-\frac{12}{13}) - \frac{4}{5} \times \frac{5}{13} = \frac{16}{65}$$

$$\therefore \sec(\alpha+\beta) = \frac{65}{16}$$

Question3 **(4 pts)**

Find the exact value of

a. $\sin(-195°)$

Solution:

$$\sin(-195°) = -\sin 195° = \sin 15° = \sin(45° - 45°)$$
$$= \sin 45°\cos 45° - \cos 45°\sin 45°$$
$$= \frac{\sqrt{2}}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2} \times \frac{1}{2} = \frac{\sqrt{6} - \sqrt{2}}{4}$$

b. $\csc^2 x - \csc^2 x \cos^2 x$

Solution:

$$\csc^2 x - \csc^2 x\cos^2 x = \csc^2 x(1 - \cos^2 x) = \frac{1}{\sin^2 x} \times \sin^2 x = 1$$