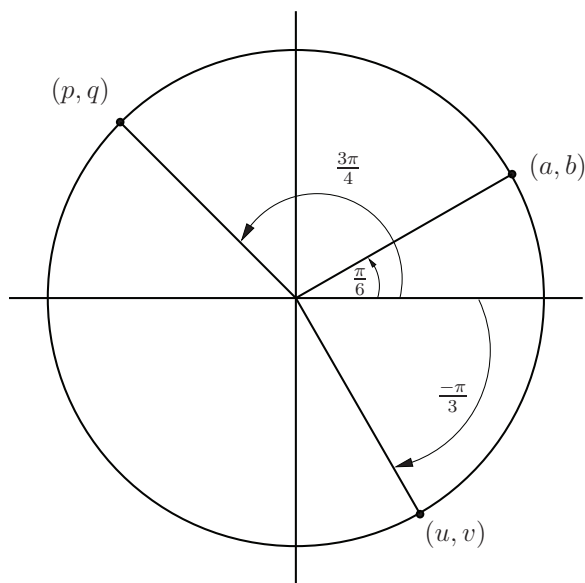


Question 1:

(a)[6 points] Determine the exact value of a , b , p , q , u and v in the following unit circle:



(b)[2 points] Convert $\frac{7\pi}{5}$ to degrees.

(c)[2 points] If $\sin \theta = -5/13$ where θ is in the fourth quadrant, what is $\cot \theta$.

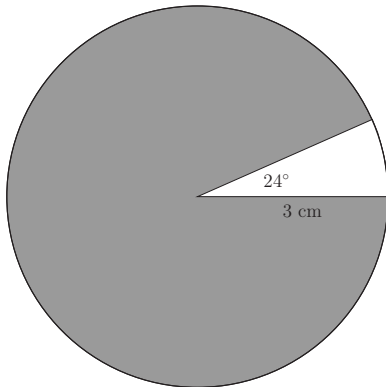
Question 2:

(a)[7 points] Carefully (and neatly!) sketch the graph of $y = -2 \sin(-3x + \pi) + 1$. Show at least one complete period, label your graph and indicate the scale on the axes.

(b)[3 points] State the period, amplitude and phase shift of the function graphed in part (a).

Question 3:

- (a)[4 points] Determine the area of the shaded region in the following figure (round your answer to 2 decimals):



- (b)[3 points] Given that $\cos\left(\frac{\pi}{16}\right) = b$, find an expression involving b for $\cos\left(-\frac{65\pi}{16}\right)$.

- (c)[3 points] Simplify $\cos^{-1}\left[\cos\left(\frac{5\pi}{3}\right)\right]$.

Question 4:

(a)[4 points] Determine the exact value of $\tan \left[\cos^{-1} \left(-\frac{3}{5} \right) \right]$.

(b)[4 points] Simplify $\sec (\sin^{-1} x)$. Your answer should not contain any trigonometric or inverse trigonometric function.

(c)[2 points] Determine the exact value of $\sin \left(\frac{5\pi}{12} \right)$.

Question 5:

(a)[4 points] Given that $\sin \left[\cos^{-1} \left(-\frac{4}{5} \right) \right] = \frac{3}{5}$, determine the exact value of $\cos \left[\tan^{-1} (-1) + \cos^{-1} \left(-\frac{4}{5} \right) \right]$.

(b)[3 points] Find all angles $0 \leq \theta < 2\pi$ for which $\cos \theta = 1/2$.

(c)[3 points] Determine the exact value of $\sin(1^\circ) + \sin(2^\circ) + \sin(3^\circ) + \cdots + \sin(359^\circ)$. (Hint: think of the unit circle)