CPE 381 Classwork 02
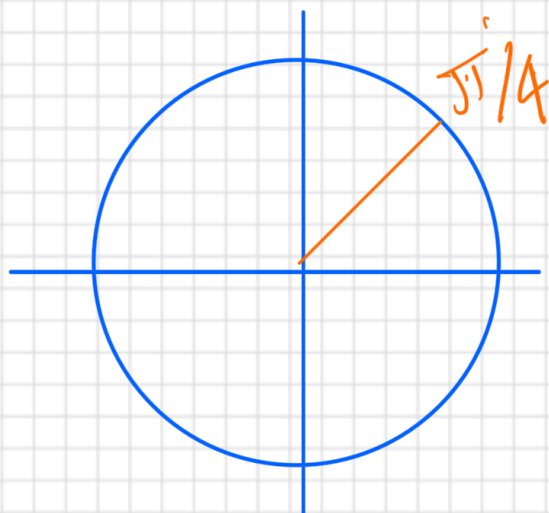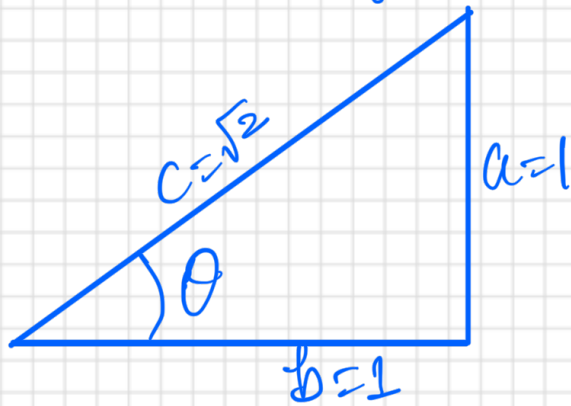
Mathematical Preliminaries : Trigonometry

① Draw a circle and mark $\frac{\pi}{6}$, $\frac{\pi}{3}$, $\frac{3\pi}{4}$

6pts   and π. An Example is given below:

$\pi/4$

② Convert $\frac{3\pi}{2}$ radian into degrees.

1pts

③ Find the value of θ : $4\sin^2\theta - 3 \geq 0$

3pts

④ Find the value of x : $2\sin^2 x - 3\sin x + 1 = 0$

3pts

⑤ Prove : $(1 - \sin^2(t))(1 + \tan^2(t)) = 1$

5pts

⑥ Prove $\frac{\sin^3(t) + \cos^3(t)}{\sin(t) + \cos(t)} = 1 - \sin(t)\cos(t)$

5pts

⑦ What is the value of $\sin\theta$ and $\cos\theta$, give $\tan\theta = \frac{4}{3}$?

2pts

2 pts ⑧ Find the value of $\sin\theta$, $\cos\theta$ from the triangle

$c=\sqrt{2}$
$a=1$
θ
$b=1$

3 pts ⑨ Prove $\sin^{-1}\left(\dfrac{\sqrt{2}}{2}\right) - \sin^{-1}\left(\dfrac{1}{2}\right) = \dfrac{\pi}{12}$

2 pts ⑩ Find the value of x given $2\sin x = 1$

$\overline{30\,pts}$