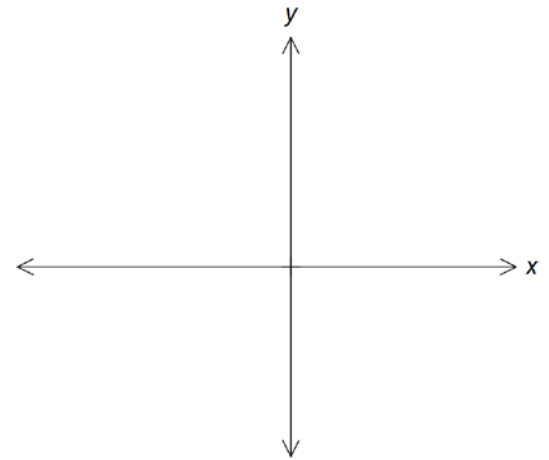


**Part 1 – Written Response**

1. An angle in standard position  $\theta$  has a terminal arm passes through a point  $(-3, 5)$ .

(a) Sketch the terminal arm, the position of the angle (*clearly label  $\theta$  as well as the reference angle  $\alpha$* ), and an appropriate triangle with the exact value of all sides labeled.

(b) Determine the exact value of all six trigonometric ratios of  $\theta$ .



(c) Determine the value of  $\theta$ , correct to the nearest degree and hundredth of a radian.

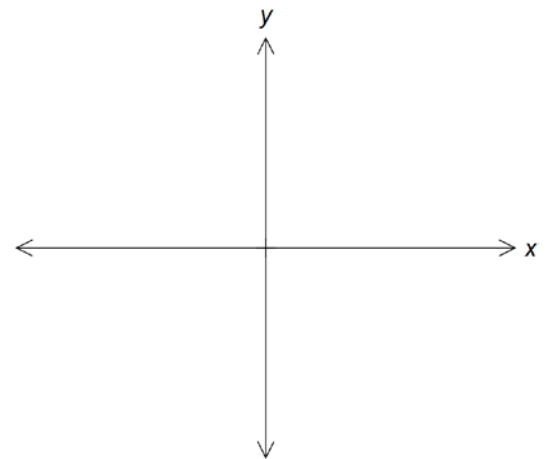
6

2. For the angle  $\theta = -\frac{11\pi}{4}$ ,

(a) **Convert** to degrees

(b) **Determine** the principal angle, in radians.

(c) **Sketch** both  $\theta$  and the principal angle. (*Label principal angle as "PA"*)



(d) **State** the reference angle, in degrees

(e) Use your unit circle or special triangles to **determine** the exact value of  $\sin \theta$ ,  $\cos \theta$ , and  $\tan \theta$

7

3. Use your **calculator** to determine the coordinates (nearest hundredth) of a point on the unit circle  $P(\frac{5\pi}{9})$ . (*What are the coordinates of the point for which the angle in standard position is  $\theta = \frac{5\pi}{9}$* )

13

4. Use your unit circle to determine the exact value of each indicated trigonometric ratio:

(a)  $\cos \frac{11\pi}{6}$

(b)  $\csc 150^\circ$

(c)  $\tan \frac{8\pi}{3}$

(d)  $\sin\left(-\frac{3\pi}{2}\right)$

5. Use your unit circle to identify the angle(s) between 0 and  $2\pi$  for which  $\cos \theta = -\frac{1}{2}$ . *Answer in exact radians – please include a diagram.*

6. A point on the unit circle has coordinates  $P\left(-\frac{3}{5}, y\right)$ . Determine the two possible values of  $y$ , and the two possible values of  $\theta$ , correct to the nearest degree. *Please include a diagram.*

7. Determine the angles  $\theta$  such that  $\sin \theta = -\frac{2}{5}$ . *(Nearest degree and nearest hundredth of a radian)*