Plane Trigonometry Exam Two Review

1. Perform the following conversions.

   (a) Convert $135°$ to radians.

   (b) Convert $\dfrac{7}{4}\pi$ radians to degrees.

2. Find all circular functions of $-\dfrac{\pi}{6}$ using exact values without a calculator.

3. Find all circular functions of $\dfrac{5\pi}{4}$ using exact values without a calculator.

4. Find an angle θ in the interval $\left[\dfrac{\pi}{2}, \pi\right]$, such that $\sin(\theta) = 0.6$. Provide an approximate answer in radians.

5. Cities A and B have latitudes of $20°$ N and $25°$ N, respectively. If city B is directly North of city A, what is the distance between them? (Hint: the radius of Earth is approximately 6400 km.)

6. Consider the function $y = 5 + 3\sin\left[4\left(x - \frac{\pi}{4}\right)\right]$, and determine the following.

(a) The amplitude.

(b) The period.

(c) The vertical shift.

(d) The phase shift.

(e) Plot this function using the window $[0, 2\pi] \times [0, 8]$.

7. A satellite is 2000 km above the Earth's surface and makes one circular orbit every 3 hours. What is its linear speed?