1. (20 points) Circle your answer, or fill in the blank.

(a) Find the degree measure of the angle with the radian measure \( \frac{19\pi}{12} \).

   i) 570  
   ii) 285  
   iii) 0.087  
   iv) not listed

(b) Find the radian measure of the angle with the degree measure \(-130^\circ\).

   i) \(-2.269\)  
   ii) \(-74.8\)  
   iii) \(-1.134\)  
   iv) not listed

(c) The measures of two angles in standard position are: \( \frac{5\pi}{7} \) and \( \frac{40\pi}{7} \). Are these two angles coterminal?

   i) Yes  
   ii) No

(d) The measure of an angle in standard position is \(-500^\circ\). A positive angle which is coterminal with the given angle is:

   i) \(-140^\circ\)  
   ii) \(40^\circ\)  
   iii) \(580^\circ\)  
   iv) not listed

(e) Find an angle between \(0^\circ\) and \(360^\circ\) that is coterminal with \(1560^\circ\).
2. (a) (12 points) Sketch a triangle that has an acute angle $\theta$, and find the other trigonometric ratios of $\theta$, if $\sin(\theta) = \frac{5}{7}$.

\[
csc(\theta) = \underline{\phantom{0000000000}}
\]

\[
\cos(\theta) = \underline{\phantom{0000000000}}
\]

\[
\sec(\theta) = \underline{\phantom{0000000000}}
\]

\[
\tan(\theta) = \underline{\phantom{0000000000}}
\]

\[
\cot(\theta) = \underline{\phantom{0000000000}}
\]

(b) (8 points) How tall is a building if the angle of elevation from the ground is $25^\circ$ at a distance of 80m from the base of the building.
3. (20 points) **Circle your answer.**

(a) Find the reference angle for 280°.

i) 280°   ii) 80°   iii) 10°   iv) not listed

(b) Find the quadrant in which an angle θ lies, if \( \sin(\theta) < 0 \) and \( \cos(\theta) > 0 \).

i) I   ii) II   iii) III   iv) IV

(c) Find the value of \( \sin(\theta) \) if \( \cos(\theta) = \frac{-4}{5} \) and \( \theta \) is in quadrant II.

i) \( \frac{1}{5} \)   ii) \( \frac{-3}{5} \)   iii) \( \frac{3}{5} \)   iv) not listed

(d) Find the area of an equilateral triangle with sides of length 5 in.

i) 21.6   ii) 6.25   iii) 10.8   iv) not listed

(e) Write \( \tan(\theta) \) in terms of \( \sin(\theta) \), where \( \theta \) is an angle in quadrant II.

i) \( \frac{-\sin(\theta)}{\sqrt{1 - \sin^2(\theta)}} \)   ii) \( \frac{\sin(\theta)}{\sqrt{1 - \sin^2(\theta)}} \)   iii) \( \frac{-\sqrt{1 - \sin^2(\theta)}}{\sin(\theta)} \)   iv) not listed
4. (20 points) **Circle your answer.**

(a) Find the terminal point \( P(x, y) \) on the unit circle determined by \( t = \frac{5\pi}{3} \).

i) \((0.5, -0.87)\)  ii) \((-0.87, 0.5)\)  iii) \((0.99, 0.09)\)  iv) not listed

(b) The terminal point on the unit circle determined by \( t \) is the point \( P = \left(\frac{2}{3}, \sqrt{\frac{5}{3}}\right) \). Find the terminal point determined by \( t - \pi \).

i) \(\left(-\frac{2}{3}, \frac{\sqrt{5}}{3}\right)\)  ii) \(\left(-\frac{2}{3}, -\frac{\sqrt{5}}{3}\right)\)  iii) \(\left(\frac{2}{3}, -\frac{\sqrt{5}}{3}\right)\)  iv) not listed

(c) Find the sign of \( \csc(t) \) if \( \cos(t) > 0 \) and \( \cot(t) < 0 \).

i) Positive  ii) Negative

(d) Find \( \tan(t) \) if \( \sin(t) = \frac{-3}{4} \) and \( \sec(t) < 0 \).

i) \(\frac{3}{\sqrt{7}}\)  ii) \(\frac{-3}{\sqrt{7}}\)  iii) 3  iv) not listed

(e) Determine whether the function \( f(x) = 3x^2 + \cos(x) \) is even, odd, or neither.

i) Even  ii) Odd  iii) Neither
5. (a) (8 points) A sector of a circle has an angle of 50°. Find the area of the sector if the radius of the circle is 6 ft. Round your answer to two decimal places.

(b) (12 points) Given \( y = 3 \sin\left(\frac{\pi}{4} x + \frac{\pi}{2}\right) \), fill in the blank:

Amplitude: 

Period: 

Phase shift: 

An appropriate interval on which to graph one complete period: 

Graph one complete period, clearly indicating the \( x \)-intercepts.
Formula Sheet

• Area of a triangle with sides of length $a, b$, and included angle $\theta$:

$$A = \frac{1}{2}ab\sin(\theta)$$

• Trigonometric identities:

$$\sin^2(\theta) + \cos^2(\theta) = 1$$
$$1 + \tan^2(\theta) = \sec^2(\theta)$$
$$1 + \cot^2(\theta) = \csc^2(\theta)$$