Name: _____ _____ **/ 40**

Assessment 5 Instructions:

- The AS-5 is 10 problems and is worth 40 points.
- You will have 1 hour to complete AS-5.
- The AS-5 is closed book and closed notes.
- **Calculators are not allowed** on the AS-5.
- Show all your work for full credit and box your final answer.

1. [4 points] Use the properties of logarithms to **expand** the following expressions as much as possible.

$$\log\left(\frac{10}{\sqrt{x+y}}\right)$$

2. [4 points] Solve the following exponential and logarithmic equations.

a. $e^{4x} = e^{3x+14}$

b. $\log_5 x^2 = 3$

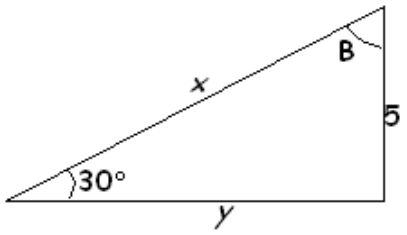
3. [4 points] Convert each of the following angle measures as directed.

a. Express $\dfrac{3\pi}{2}$ in degrees.

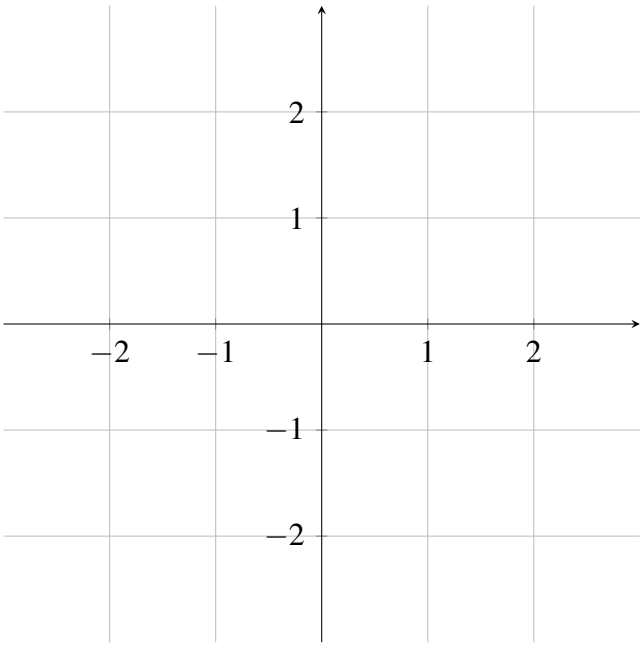
b. Express -144° in radians.

4. [4 points] Find the area of the sector of a circle of radius 20 ft with a central angle of 138°. *(Hint:* $A = \frac{r^2\theta}{2}$*)*

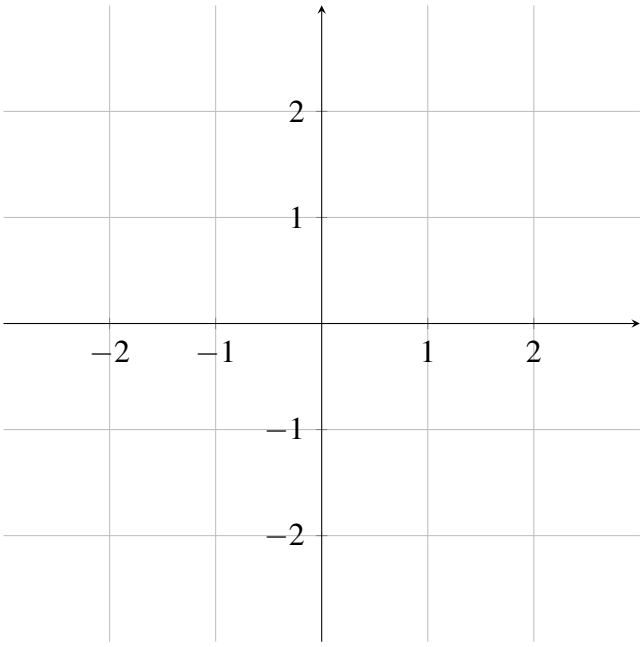
5. [4 points] Use the information contained in the figure to determine the values of the six trigonometric functions of an angle B.



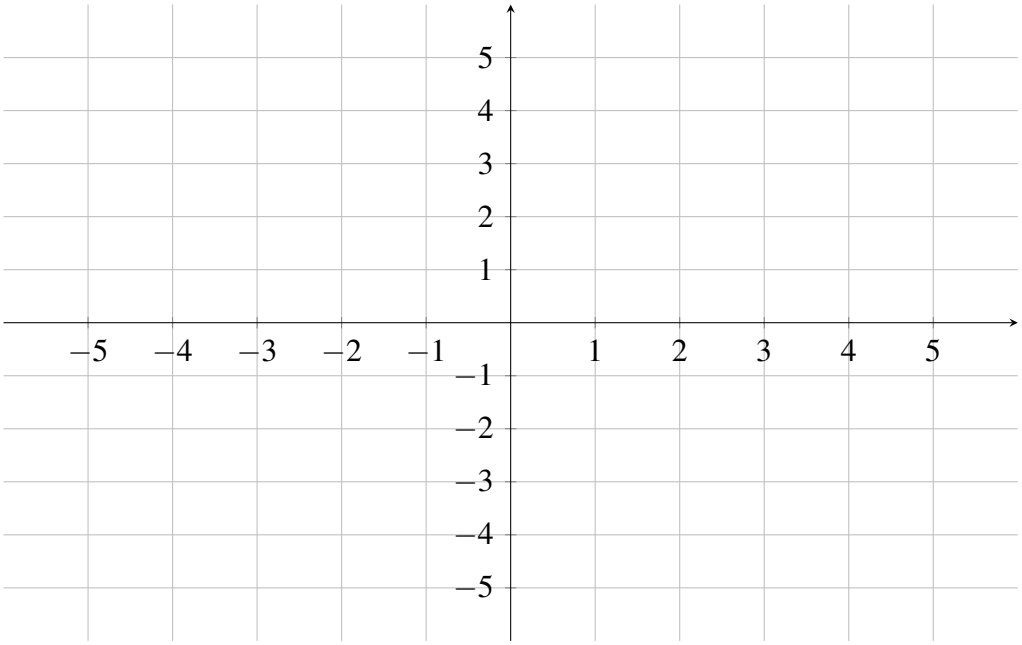
6. [4 points] Determine the point (x,y) on the unit circle associated with the real number $s = -\dfrac{\pi}{4}$. Sketch the the unit circle and the point (x,y) on it on the plane below.



7. [4 points] Determine the reference angle associated with the given angle $\theta = -60^\circ$. Sketch both angles θ and θ' on the plane below.



8. [4 points] Sketch the graph of the function $g(x) = -2\sin(2\pi x)$. State **precisely** the amplitude, frequency and phase shift for the given function.



9. [4 points] Evaluate the following expressions

a. $\arccos(-1) =$

b. $\arctan(-\sqrt{3}) =$

10. [4 points] Use trigonometric identities to simplify the expression

$$\frac{1}{\sec^2 x} + \sin x \cdot \cos\left(\frac{\pi}{2} - x\right)$$