By providing my signature below I acknowledge that I abide by the University's academic honesty policy. This is my work, and I did not get any help from anyone else during the exam:

Name (sign): _____ Name (print): _____

Student Number: _____

Instructor's Name: _____ Class Time: _____

$$\cos(\alpha + \beta) = \cos(\alpha) \cdot \cos(\beta) - \sin(\alpha) \cdot \sin(\beta)$$

$$\sin(\alpha + \beta) = \sin(\alpha) \cdot \cos(\beta) + \cos(\alpha) \cdot \sin(\beta)$$

Problem Number	Points Possible	Points Made
1	12	
2	12	
3	12	
4	8	
5	16	
6	15	
7	10	
8	15	
Total:	100	

- If you need extra space use the last page.
- Please show your work. **An unjustified answer may receive little or no credit.**
- If you make use of a theorem to justify a conclusion then state the theorem used by name.
- Your work must be **neat**. If I can't read it (or can't find it), I can't grade it.
- The total number of possible points that is assigned for each problem is shown here. The number of points for each subproblem is shown within the exam.
- Please turn off your mobile phone.
- A calculator is not necessary, but numerical answers should be given in a form that can be directly entered into a calculator.

1. A sector has radius $r = 23$ inches and interior angle $\theta = 2.4$ radians. Answer the following. Give an exact answer, or an answer correct to four decimal places.

   (a) [6 pts] Determine the perimeter of the sector.

   (b) [6 pts] Determine the area of the sector.

2. Give an exact value for the following expressions, or explain why the value does not exist. Decimal answers without sufficient work will receive no credit.

   (a) [6 pts] $\cos(\arccos(2\pi))$

   (b) [6 pts] $\arcsin\left(\sin\left(\frac{13\pi}{8}\right)\right)$

3. [12 pts] Determine the Domain and Range of the given functions. Give your answer in interval notation. You do not have to show your work.

FUNCTION	DOMAIN	RANGE
$f(x) = 4 - \sin^2(x)$		
$g(x) = \arcsin(x)$		
$h(x) = \arctan(x)$		

4. [8 pts] Give an exact value for the following expressions. Decimal answers without sufficient work will receive no credit.

$$\cos(\arcsin(0.6) + \arccos(0.7))$$

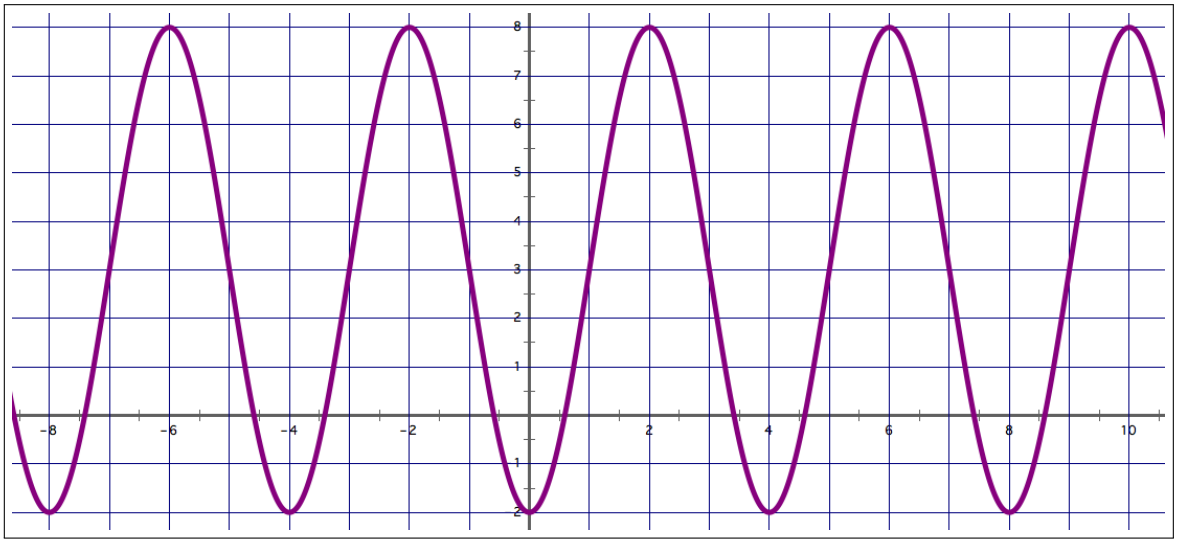
5. Suppose that $3\pi/2 \leq \theta \leq 2\pi$ and $\cot(\theta) = -\dfrac{9}{13}$. Answer the following:

   (a) [4 pts] Determine the **exact value** for $\cos(\theta)$.

   (b) [4 pts] Determine the **exact value** for $\sin(\theta)$.

   (c) [8 pts] Determine the value for θ that satisfies the given equation. Give an exact answer, or an answer correct to four decimal places.

6. [15 pts] The graph of a periodic function $f(x)$ is given below. Determine a possible function for $f(x)$. Make sure to show all your work.



7. [10 pts] Use properties of trigonometry to show that the following equation is an identity.

$$\frac{\cos^2(x)+8}{\sin(x)}+\sin(x)=9\csc(x)$$

8. [15 pts] On my vacation to Los Angeles I took a helicopter tour and saw the iconic Hollywood Sign (45 ft tall) from a straight-line distance of 1500 ft. The angle of depression between me and the bottom of the Hollywood sign is 13.7°. What is my elevation, measured from the top of the Hollywood sign?

Extra space for work. **Do not detach this page.** If you want us to consider the work on this page you should print your name, instructor and class meeting time below.

Name (print): _____ Instructor (print): _____ Time: _____