

Midterm Review

*Instructor: Joshua Miller***Topics to Study:**

Problem 1: Convert $18^\circ 23' 49''$ into radians. Convert $\frac{18\pi}{5}$ to D°M'S".

Problem 2a: Given $\theta = 18^\circ$ and $l = 9\text{cm}$, find the radius and area of the sector subtended by the angle.

Problem 2b: Given the equation $3x^2 - 6x + 3y^2 + y = 10$, find the center and radius of the circle.

Problem 3: A mutant turtle is perched on a tower 312 meters in the air in downtown Titusville, the angle of depression from him to the evil doer is said to be 63.2° , how far is the villain away from the point directly below the turtle.

Problem 4: Given a right triangle with right angle at A , find the missing information if $AB = 2$ and $AC = x$ for $x > 0$.

Problem 5: Given vectors $u = [1, 3]$ and $v = [2, 4]$ find $\|u\|$, $\|v\|$ and $\|3u - \frac{3}{2}v\|$

Problem 6: Find the general solution of $2\sin^2 t + 6\sin t - 4 = 0$

Problem 7: Find the exact values of $\frac{5 - \tan \theta}{\tan \theta - 2} = 3 \tan \theta$.

Problem 8: Find all solutions of the following $\sin \theta = \frac{-4}{5}$ and $\cot \theta = 82$.

Problem 9: Find the exact values of $\cos(\arcsin(-1/4))$ and $\csc(\arctan(18))$.

Problem 10: Given the points $A(1, 3)$, $B(-2, 2)$, and $C(2, 6)$, find the area(ABC) and that angle $\angle BAC$