Worksheet-Review for Exam 3   Trigonometry   Summer A 2016

1. In each part, you are given the polar coordinates of a point. First plot the point, and then find the rectangular coordinates of each point. Finally, give two different polar coordinates representation of the same point.

(a) $(r = -5, \theta = \dfrac{\pi}{4})$ (b) $(r = 2, \theta = \dfrac{5\pi}{6})$

2. (a) Convert to rectangular coordinates $r = 4\csc\theta$ and graph the curve.

(b) Convert to rectangular coordinates $r = 6\cos\theta - 2\sin\theta$. Then complete the squares to show that the graph of the curve is a circle and graph the curve.

3. Identify and make a rough sketch of each polar equation

(a) $r = 3 - 3\cos(\theta)$

(b) $r = 5\sin(2\theta)$

(c) $r = 2\cos(3\theta)$.

4. Solve each of the following triangles. Specify if no solution, or more than one solution exist.

(a) Solve the triangle with $a = 3$, $b = 4$, $A = 20^o$.

(b) Solve the triangle with angles $A = 10^o$, $C = 100^o$, and side $b = 2$.

(c) Solve the triangle with $a = 24$, $b = 26$, and $c = 10$.

5. (a) Suppose that in a triangle we know two sides, a, b, and the angle C between them. Show that the area of the triangle is given by $A = \frac{ab \sin C}{2}$.

(b) Find the area of a rhombus with sides of 3 cm and one angle of 30°. Also find the length of the diagonals of this rhombus.

6. Pbs. 52, 58, section 7.1 textbook.

7. Pbs. 39, 40, 41. section 7.2.

8. Solve each equation on the interval $0 \le \theta < 2\pi$

a) $\sin \theta - \sqrt{3} \cos \theta = 0$

b) $\cos \theta + \sin \theta = -\sqrt{2}$

c) (Use the appropriate double angle formula first) $\sin(2\theta) = 2 \sin \theta 0$

d) (Use the appropriate double angle formula first) $\cos(2\theta) = 3 - \sin \theta$

e) (Use the appropriate identity first) $5(1 + \cos \theta) = \sin^2 \theta$