

Exam #4

April 11, 2018

Name _____

- You will be told when to begin the work and when to terminate work on the examination. You must stop when instructed. Points may be deducted in case of violations.
- Please show your work to support your answers that require calculations. Correct but unsupported answers may not be given full credit.
- The use of a cell phone or other electronic communication devices during the examination is not allowed. The exam will be canceled and a grade of “0” will be assigned to anyone who uses a cell phone during the examination or if one is found within hands reach.
- Calculators are not allowed on this exam.

Choose your answer from available choices. No partial credit will be given for wrong answers.

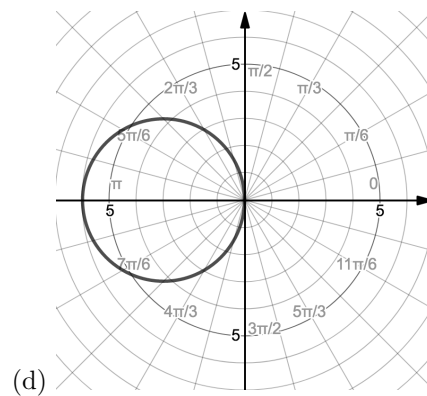
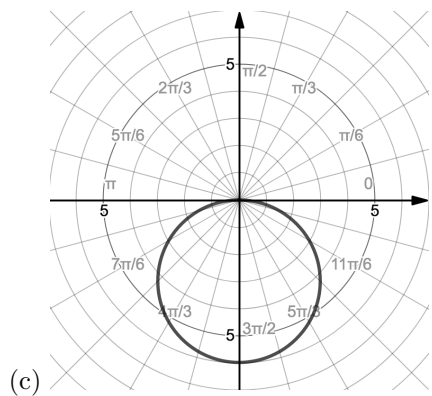
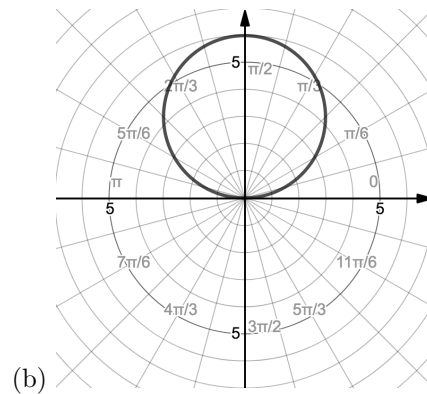
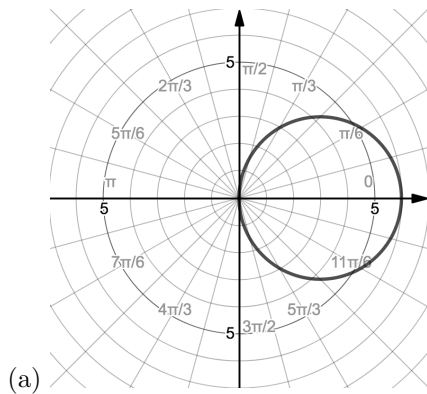
1. (8 pts) Find the exact value of $\tan^{-1}(-1)$

- (a) $-\frac{\pi}{4}$ (b) $\frac{\pi}{4}$ (c) $\frac{3\pi}{4}$ (d) $\frac{5\pi}{4}$ (e) None of the above

2. (8 pts) Find an asymptote of $y = 2 \tan(2x)$

- (a) $\frac{\pi}{2}$ (b) $-\frac{\pi}{2}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{4}$ (e) None of the above

3. (8 pts) Identify the polar graph $r = -6 \sin \theta$



4. (8 pts) Find the rectangular coordinates of $(r, \theta) = (3, -135^\circ)$

- (a) $(\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2})$ (b) $(-\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2})$ (c) $(\frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2})$ (d) $(-\frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2})$ (e) None of the above

5. (8 pts) How many triangles have the following: $a = 3, b = 5, c = 10$?

- (a) No triangle (b) One triangle (c) Two triangles (d) None of the above

6. (10 pts) Solve: $4 \tan(x) - 4 = 0$ in $[0, 2\pi)$

7. (10 pts) Verify the identity:

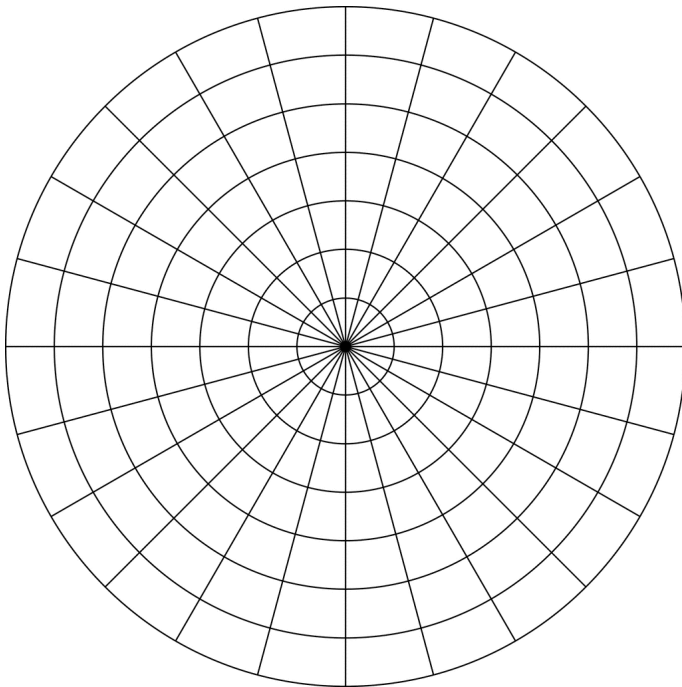
$$\frac{\cot^2 t}{\csc t - 1} = \frac{1 + \sin t}{\sin t}$$

8. (10 pts) Convert from rectangular equation to polar equation:

$$x^2 + (y - 3)^2 = 9$$

9. (10 pts) Graph the following equation:

$$r = 1 + \sin t$$



10. (10 pts) Evaluate: $(-1 + i)^6$ [You can leave your answer in polar form or rectangular form.]

11. (10 pts) How many triangles are possible with: $a = 3, b = 4$, and $A = 30^\circ$? Explain your answer. [Hint: Draw the height.]

12. (10 pts) A tree leans at an angle of 75° . The figure shows that 30 feet from the base of the tree, the angle of elevation to the top is 45° . Find the height of the tree.

