

Question

123456789101112131415161718192021222324252627282930313233343536

**Description**

This is the review for Exam #3. Please work as many problems as possible before we review in-class. As always, if you need anything, please email me  
Joshua.Patterson@tamuc.edu

1. Question Details

SPreCalc6 7.1.004. [2703858]

Write the trigonometric expression in terms of sine and cosine, and then simplify.

$$\cos t \csc t$$

2. Question Details

SPreCalc6 7.1.009. [2703875]

Write the trigonometric expression in terms of sine and cosine, and then simplify.

$$\sin u \tan u + \cos u$$

3. Question Details

SPreCalc6 7.1.010. [2705111]

Write the trigonometric expression in terms of sine and cosine, and then simplify.

$$\sin^2 \theta (1 + \cot^2 \theta)$$

4. Question Details

SPreCalc6 7.1.011. [2703846]

Write the trigonometric expression in terms of sine and cosine, and then simplify.

$$\frac{\csc \theta - \sin \theta}{\cos \theta}$$

5. Question Details

SPreCalc6 7.1.015. [2703802]

Simplify the trigonometric expression.

$$\frac{\cos y + 1}{1 + \sec y}$$

6. Question Details

SPreCalc6 7.1.017. [2703798]

Simplify the trigonometric expression.

$$\frac{\csc^2 x - 1}{\csc^2 x}$$

7. Question Details

SPreCalc6 7.1.058. [1719003]

Verify the identity.

$$\frac{\sin w}{\cos w + \sin w} = \frac{\tan w}{\tan w + 1}$$

8. Question Details

SPreCalc6 7.1.062. [1719017]

Verify the identity.

$$\frac{1 + \sec^2 x}{1 + \tan^2 x} = 1 + \cos^2 x$$

9. Question Details

SPreCalc6 7.1.066. [1719027]

Verify the identity.

$$\frac{\sin A}{1 + \cos A} + \cot A = \csc A$$

10. Question Details

SPreCalc6 7.1.084. [1719252]

Verify the identity.

$$\frac{1 + \cot x}{1 - \cot x} = \frac{\tan x + 1}{\tan x - 1}$$

11. Question Details

SPreCalc6 7.2.003. [2708358]

Use an Addition or Subtraction Formula to find the exact value of the expression, as demonstrated in [Example 1](#).

$$\sin 105^\circ$$

12. Question Details

SPreCalc6 7.2.006. [2708244]

Use an Addition or Subtraction Formula to find the exact value of the expression, as demonstrated in [Example 1](#).

$$\cos 165^\circ$$

13. Question Details

SPreCalc6 7.2.015. [2708250]

Use an Addition or Subtraction Formula to write the expression as a trigonometric function of one number.

$$\sin 12^\circ \cos 48^\circ + \cos 12^\circ \sin 48^\circ$$

Find its exact value.

14. Question Details

SPreCalc6 7.2.017. [2708345]

Use an Addition or Subtraction Formula to write the expression as a trigonometric function of one number.

$$\cos \frac{3\pi}{5} \cos \frac{4\pi}{15} + \sin \frac{3\pi}{5} \sin \frac{4\pi}{15}$$

Find its exact value.

15. Question Details

SPreCalc6 7.2.034.MI. [2678438]

Prove the identity.

$$\cos(x + y) + \cos(x - y) = 2 \cos x \cos y$$

16. Question Details

SPreCalc6 7.2.036. [1759351]

Prove the identity.

$$\cot(x + y) = \frac{\cot y \cot x - 1}{\cot y + \cot x}$$

17. Question Details

SPreCalc6 7.3.004. [2708211]

Find  $\sin 2x$ ,  $\cos 2x$ , and  $\tan 2x$  from the given information.

$$\tan x = -\frac{15}{8}, \quad x \text{ in Quadrant II}$$

$\sin 2x =$

$\cos 2x =$

$\tan 2x =$

18. Question Details

SPreCalc6 7.3.006.MI. [2678458]

Find  $\sin 2x$ ,  $\cos 2x$ , and  $\tan 2x$  from the given information.

$$\csc x = 6, \quad \tan x < 0$$

$\sin 2x =$

$\cos 2x =$

$\tan 2x =$

19. Question Details

SPreCalc6 7.3.009. [2708228]

Find  $\sin 2x$ ,  $\cos 2x$ , and  $\tan 2x$  from the given information.

$$\tan x = -\frac{1}{3}, \quad \cos x > 0$$

$\sin 2x =$

$\cos 2x =$

$\tan 2x =$

20. Question Details

SPreCalc6 7.3.017. [2709806]

Use an appropriate Half-Angle Formula to find the exact value of the expression.

$$\cos 15^\circ$$

21. Question Details

SPreCalc6 7.3.025. [2709702]

Use an appropriate Half-Angle Formula to find the exact value of the expression.

$$\sin \frac{\pi}{12}$$

22. Question Details

SPreCalc6 8.1.030. [2694693]

Find the rectangular coordinates for the point whose polar coordinates are given.

$$\left(-1, \frac{5\pi}{2}\right)$$

$$(x, y) = ( \quad , \quad )$$

23. Question Details

SPreCalc6 8.1.031. [2694689]

Find the rectangular coordinates for the point whose polar coordinates are given.

$$(7, 7\pi)$$

$$(x, y) = ( \quad , \quad )$$

24. Question Details

SPreCalc6 8.1.033. [2694712]

Find the rectangular coordinates for the point whose polar coordinates are given.

$$\left(8\sqrt{2}, \frac{11\pi}{6}\right)$$

$$(x, y) = ( \quad , \quad )$$

25. Question Details

SPreCalc6 8.1.034. [2694700]

Find the rectangular coordinates for the point whose polar coordinates are given.

$$\left(\sqrt{3}, -\frac{5\pi}{3}\right)$$

$$(x, y) = ( \quad , \quad )$$

26. Question Details

SPreCalc6 8.1.035-042.501.XP.MI. [1870983]

A point in rectangular coordinates is given. Convert the point to polar coordinates ( $r > 0$ ,  $0 \leq \theta < 2\pi$ ).

$$(-7, -7)$$

$$(r, \theta) = ( \quad , \quad )$$

27. Question Details

SPreCalc6 8.1.035. [2694697]

Convert the rectangular coordinates to polar coordinates with  $r > 0$  and  $0 \leq \theta < 2\pi$ .

$$(6, -6)$$

$$(r, \theta) = ( \quad , \quad )$$

Convert the rectangular coordinates to polar coordinates with  $r > 0$  and  $0 \leq \theta < 2\pi$ .

$$(9\sqrt{3}, -9)$$

$$(r, \theta) = ( \quad )$$

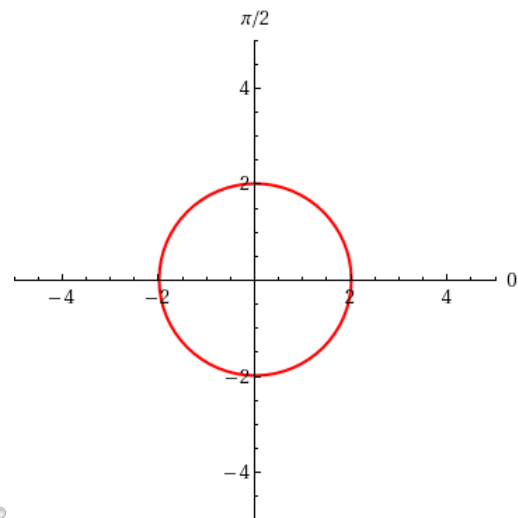
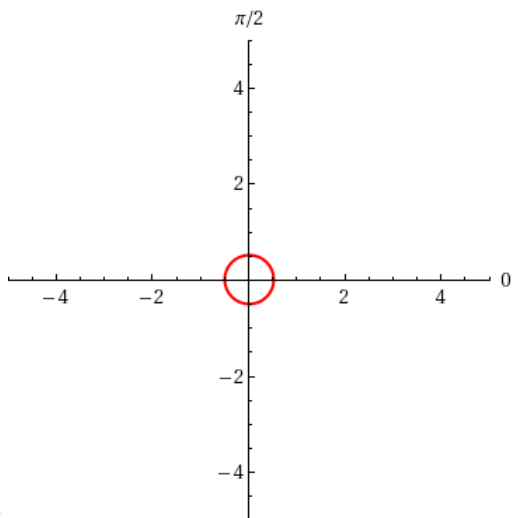
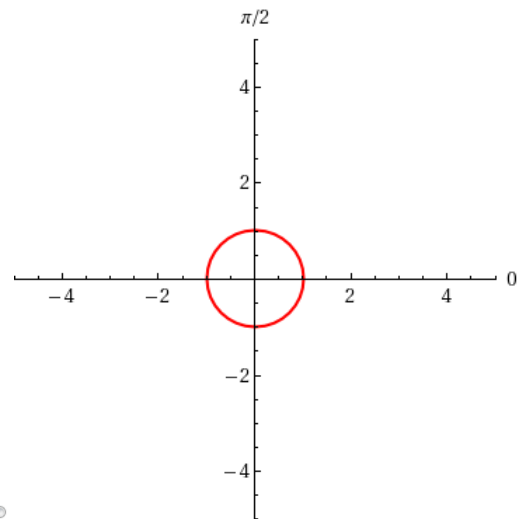
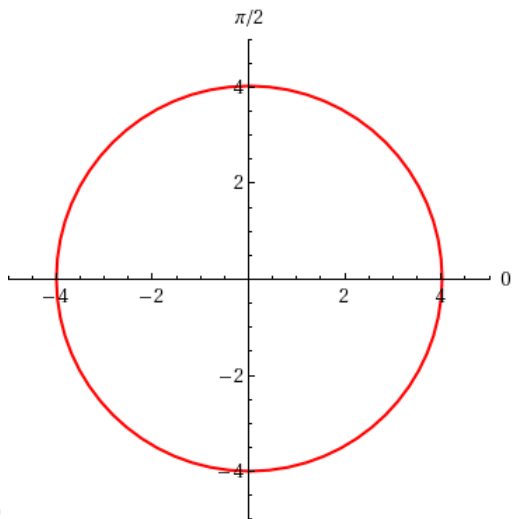
Convert the rectangular coordinates to polar coordinates with  $r > 0$  and  $0 \leq \theta < 2\pi$ .

$$(-\sqrt{6}, -\sqrt{2})$$

$$(r, \theta) = ( \quad )$$

Sketch a graph of the polar equation.

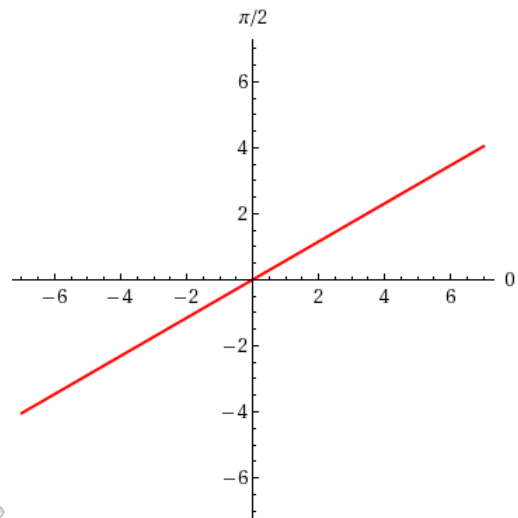
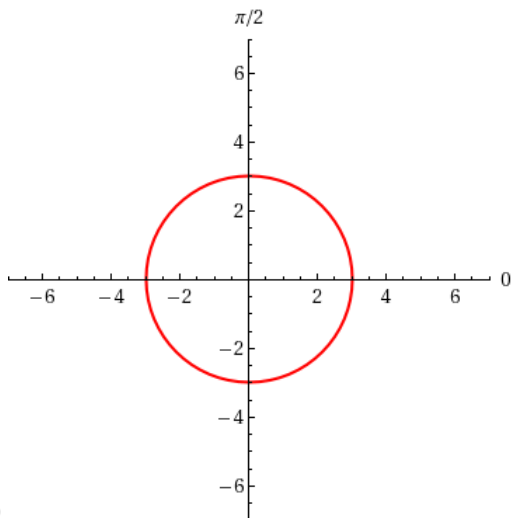
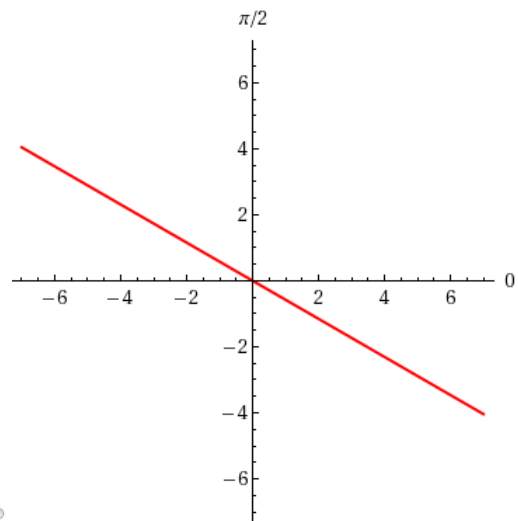
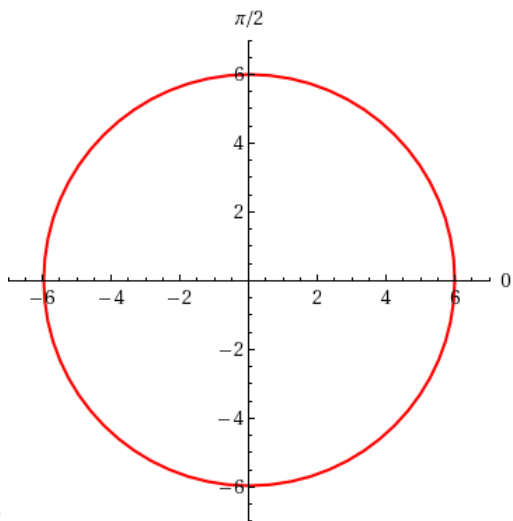
$$r = 2$$



Express the equation in rectangular coordinates. (Use variables  $x$  and  $y$ .)

Sketch a graph of the polar equation.

$$\theta = \frac{5\pi}{6}$$



Express the equation in rectangular coordinates. (Use variables  $x$  and  $y$ .)

Write the complex number in polar form with argument  $\theta$  between 0 and  $2\pi$ .

$$8 + 8i$$



33. Question Details

SPreCalc6 8.3.030.MI. [2678942]

Write the complex number in polar form with argument  $\theta$  between 0 and  $2\pi$ .

$$3 + 3\sqrt{3}i$$

34. Question Details

SPreCalc6 8.3.032. [1785268]

Write the complex number in polar form with argument  $\theta$  between 0 and  $2\pi$ .

$$6 - 6i$$

35. Question Details

SPreCalc6 8.3.033. [1785363]

Write the complex number in polar form with argument  $\theta$  between 0 and  $2\pi$ .

$$5\sqrt{3} - 5i$$

36. Question Details

SPreCalc6 8.3.069. [1741069]

Find the indicated power using De Moivre's Theorem. (Express your fully simplified answer in the form  $a + bi$ .)

$$(1 + i)^{20}$$

37. Question Details

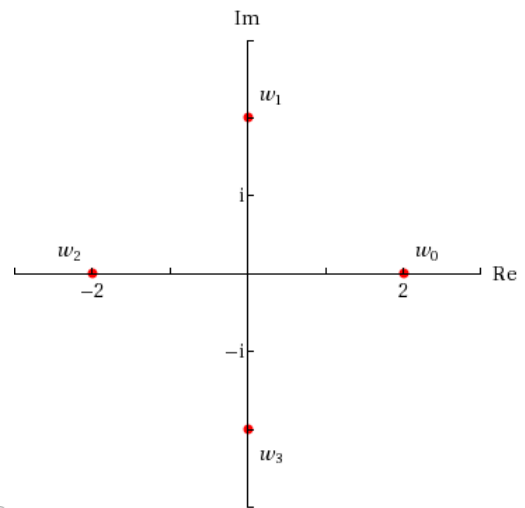
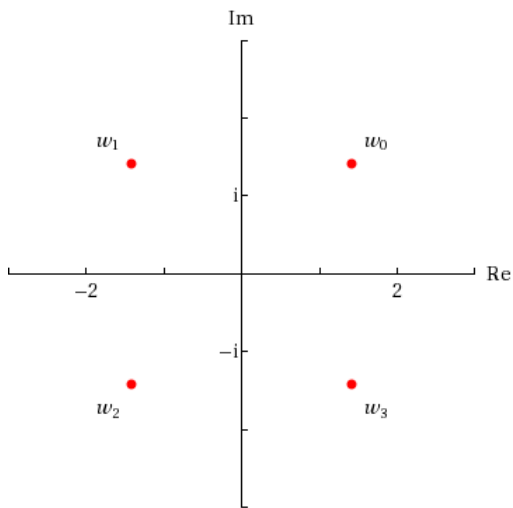
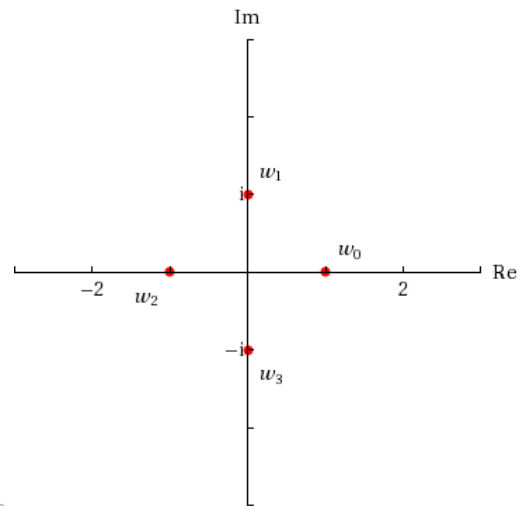
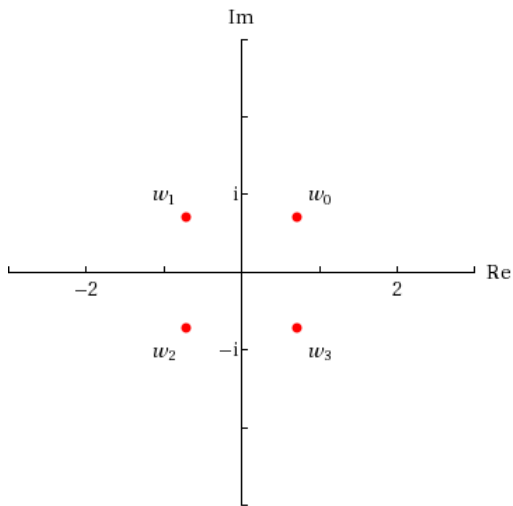
SPreCalc6 8.3.070. [1768884]

Find the indicated power using De Moivre's Theorem. (Express your fully simplified answer in the form  $a + bi$ .)

$$(1 - \sqrt{3}i)^5$$

Find the indicated roots and graph them in the complex plane.

The fourth roots of  $-1$



Referring to the labels from the graph you selected above, give the exact roots. (Express  $\theta$  in radians.)

$$w_0 =$$

$$w_1 =$$

$$w_2 =$$

$$w_3 =$$