Trigonometry	**Name:** _____
Study Guide 24	**Class:** _____
Due Date: _____	**Score:** _____

No Work ⇔ No Points

Use Pencil Only ⇔ Be Neat & Organized

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1. Given $Z_1 = 4(\cos 30^\circ + i \sin 30^\circ)$ and $Z_2 = 2(\cos 120^\circ + i \sin 120^\circ)$,

(a) (3 points) find $Z_1 Z_2$ in $a + bi$ form.

(a) _____

(b) (3 points) find $\dfrac{Z_1}{Z_2}$ in polar form.

(b) _____

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2. Given $Z = 9(\cos 150^\circ + i \sin 150^\circ)$,

(a) (3 points) find Z^2 in $a + bi$ form.

(a) _____

(b) (4 points) find all square roots of Z in polar form.

(b) _____

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3. (3 points) Convert the complex number $-4\sqrt{3} - 4i$ to a polar form.

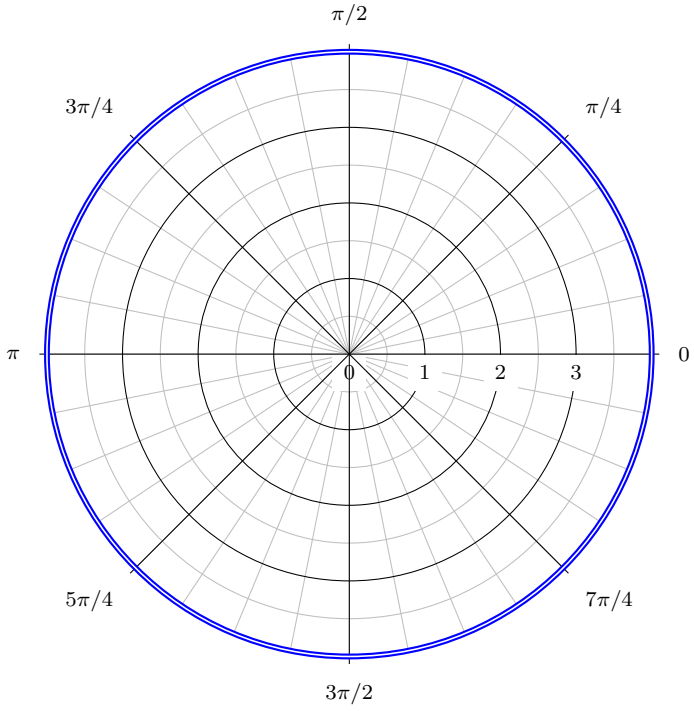
3. _____

4. (3 points) Convert $8\,cis\,210^\circ$ to a complex number in $a + bi$ form.

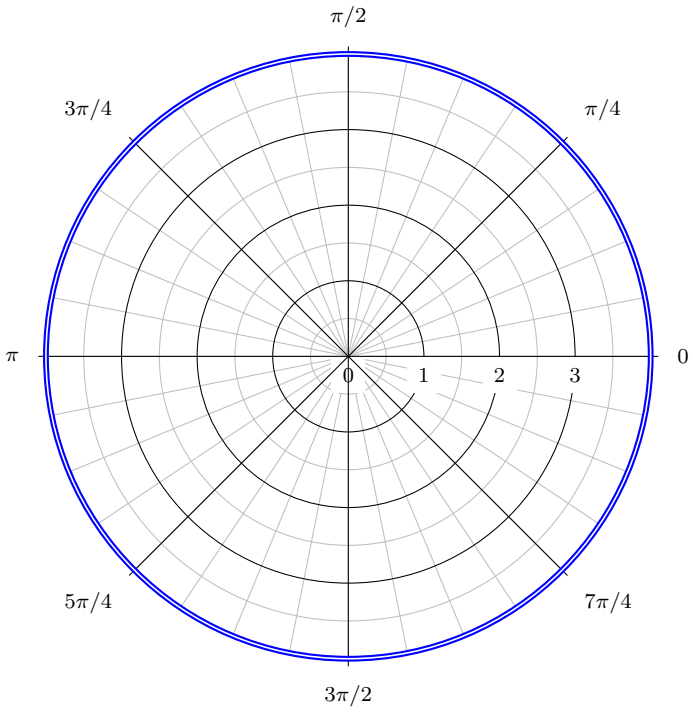
4. _____

5. (6 points) Solve and draw all solutions of $Z^3 = -8$ below. Show all solutions in polar form and clearly label each solution.

5. _____



6. (6 points) Draw $r = -4\sin\theta$ first in $r-\theta$ coordinates, then trace that graph to draw it in polar coordinates below. Show your work in details and clearly label all important points.



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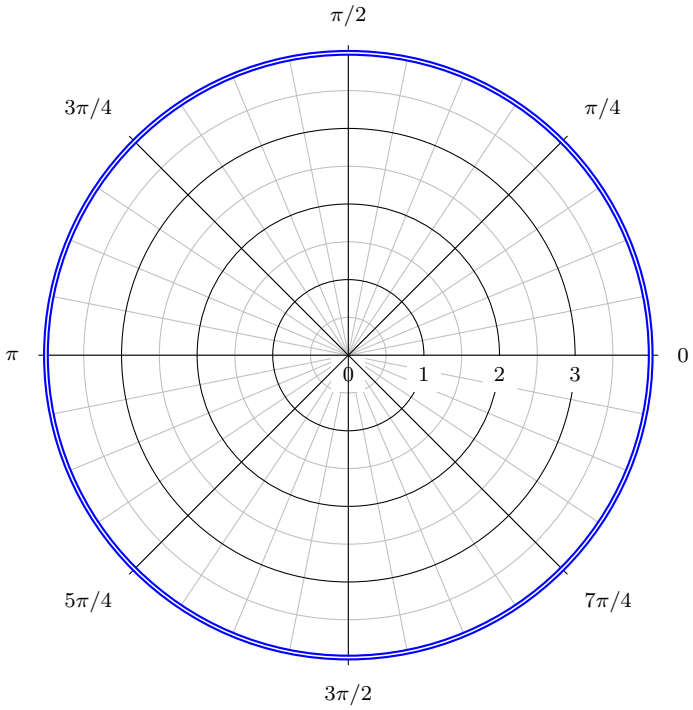
7. (6 points) Draw $r = 2\cos\theta$ first in $r-\theta$ coordinates, then trace that graph to draw it in polar coordinates below. Show your work in details and clearly label each important points.



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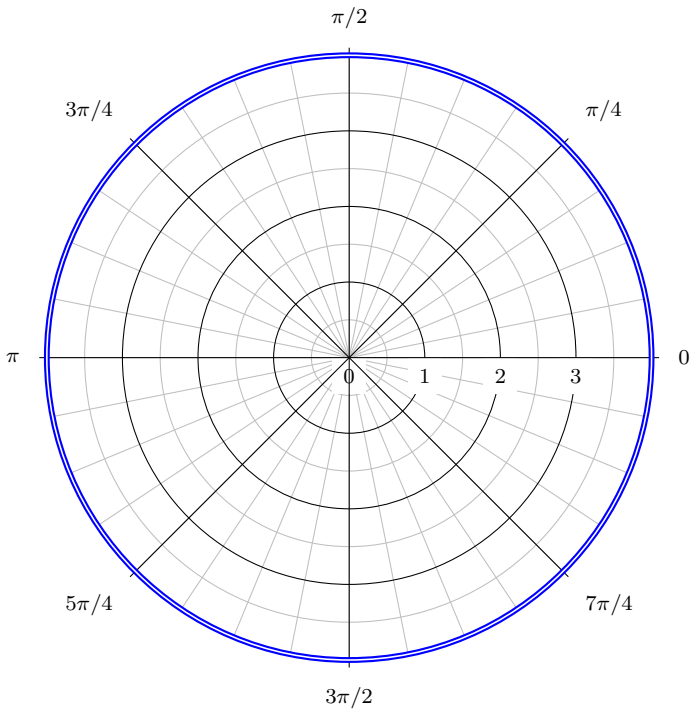
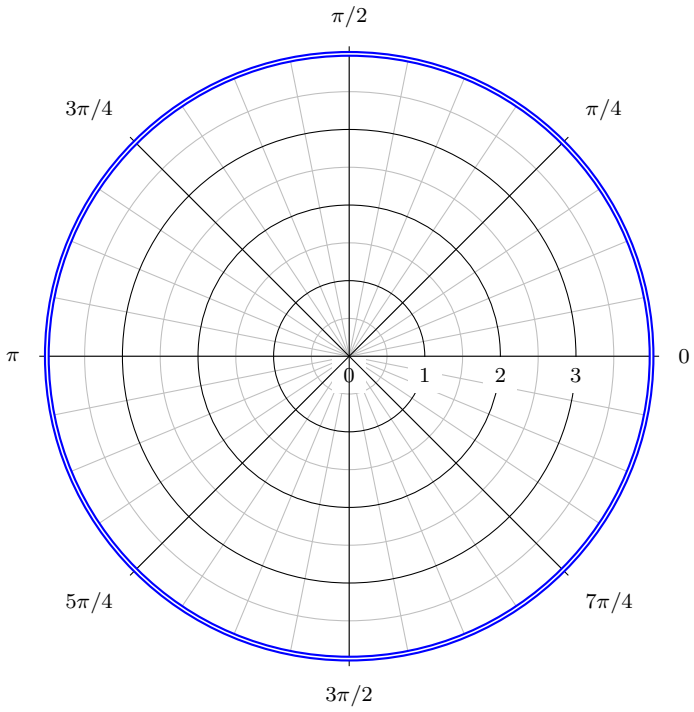
8. (7 points) Solve and draw all solutions of $z^2 - 4i = 0$ below. Show all solutions in polar form and clearly label each solution.



8. _____

9. (6 points) Solve and draw all solutions of $z^4 = 81cis\,60°$ below. Show all solutions in polar form and clearly label each solution.



9. _____