Math Analysis Honors
Unit 5 WS2- DeMoivre's Thm

Calculate each given product and express your answer in the form *a* + *bi*. Use polar form and DeMoivre's Thm.

1) $\left(-\frac{1}{2} + \frac{\sqrt{3}}{2}i\right)^{20}$
2) $\left(-\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}i\right)^{14}$
3) $\left(-1 + \sqrt{3}\,i\right)^{8}$

Find all indicated roots of unity and express your answers in the form *a* + *bi.*

4) **fourth roots of unity**
5) **sixth roots of unity**

Find the nth roots of each the given number in polar form.

6) $1 + i\ ;\ n=2$

Solve the given equation in the complex number system.

7) $x^6 + 64 = 0$
8) $x^3 = i$

Represent the roots of unity graphically. Then use the trace feature to obtain approximations of the form *a* + *bi* for each root. Round to four decimal places.

9) **seventh roots of unity**
10) **fifth roots of unity**
11) **eighth roots of unity**
12) **twelfth roots of unity**
13) **ninth roots of unity**