Name: _____

Demoivre's Theorem and nth Roots

Exercise 1: Use De Moivre's Formula to find the indicated power of the complex number. Write the result in standard form

1) $\left(\sqrt{2}+3i\right)^4$

2) $\left(\sqrt{2}+3\sqrt{5}i\right)^7$

3) $\left(3\sqrt{11}+3\sqrt{2}i\right)^6$

4) $\left(4\sqrt{7}-7i\right)^{11}$

5) $\left(\sqrt{5}+2i\right)^4$

6) $\left(5+7i\right)^9$

7) $\left(-2-2i\right)^9$

8) $\left(1+i\right)^8$

9) $\left(7-5i\right)^3$

10) $\left(7-i\right)^6$

11) $\left(1+3i\right)^{13}$

12) $\left(5-9i\right)^{14}$

13) $\left[\sqrt{2}\left(cis\pi\right)\right]^{21}$

14) $\left[7\sqrt{3}\left(cis\frac{\pi}{2}\right)\right]^9$

15) $\left[\sqrt{3}\left(cis\frac{\pi}{6}\right)\right]^8$

16) $\left[\frac{1}{2}\left(cis\frac{\pi}{3}\right)\right]^4$

17) $\left[\frac{\sqrt{2}}{2}\left(cis\frac{\pi}{8}\right)\right]^{13}$

18) $\left[\sqrt{3}\left(cis\frac{3\pi}{4}\right)\right]^6$

19) $\left[\frac{1}{2}\left(cis\frac{5\pi}{6}\right)\right]^{13}$

20) $\left[\sqrt{5}\left(cis\frac{\pi}{3}\right)\right]^5$