SATPREP Name_____

Assignment Complex Number

Date_____

Simplify. Write your answer in rectangular form.

1) $\left(\frac{\sqrt{30}}{2} - \frac{\sqrt{10}}{2}i\right)^4$

2) $(4 + i)^4$

Simplify. Write your answer in polar form.

3) $\left(\sqrt{14}\left(\cos\frac{\pi}{4} + i\sin\frac{\pi}{4}\right)\right)^4$

4) $\left(\sqrt{23}(\cos 60 + i\sin 60)\right)^4$

Find all *n*th roots. Write your answers in rectangular form.

5) $1 - i\sqrt{3},\ n = 4$

6) $5i,\ n = 5$

Find all *n*th roots. Write your answers in polar form.

7) $5(\cos 45 + i\sin 45),\ n = 2$

8) $2\left(\cos\frac{4\pi}{3} + i\sin\frac{4\pi}{3}\right),\ n = 2$

Answers to Assignment Complex Number

1) $-50 - 50i\sqrt{3}$

2) $161 + 240i$

3) $196(\cos \pi + i\sin \pi)$

4) $529(\cos 240 + i\sin 240)$

5) $0.31 + 1.15i$
$-1.15 + 0.31i$
$-0.31 - 1.15i$
$1.15 - 0.31i$

6) $1.31 + 0.43i$
$1.38i$
$-1.31 + 0.43i$
$-0.81 - 1.12i$
$0.81 - 1.12i$

7) $\sqrt{5}\left(\cos \frac{45}{2} + i\sin \frac{45}{2}\right)$
$\sqrt{5}\left(\cos \frac{405}{2} + i\sin \frac{405}{2}\right)$

8) $\sqrt{2}\left(\cos \frac{2\pi}{3} + i\sin \frac{2\pi}{3}\right)$
$\sqrt{2}\left(\cos \frac{5\pi}{3} + i\sin \frac{5\pi}{3}\right)$