Precalc Ch. 9 Review

Quiz today 9.7-9.8

Ch. 9 Test Thurs.

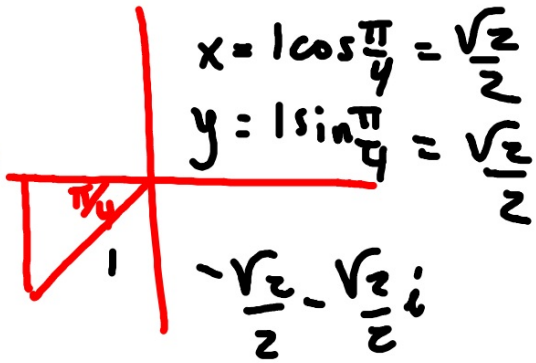
$$\left(1\,\mathrm{cis}\,\frac{\pi}{4}\right)^{-3}$$

$$1^{-3}\,\mathrm{cis}\,\frac{\pi}{4}\cdot -3$$

$$\frac{1}{1^3}\,\mathrm{cis}\left(-\frac{3\pi}{4}+2\pi\right)$$

$$1\,\mathrm{cis}\,\frac{5\pi}{4}$$

$-\frac{3\pi}{4}+\frac{8\pi}{4}$



$$x = 1\cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$y = 1\sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$-\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}i$$

$(-27i)^{\frac{1}{3}}$ $\quad 360 \cdot \frac{1}{3} = 120$

$-180 \longleftrightarrow 180$

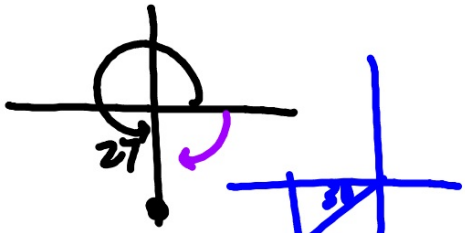
$(0-27i)^{\frac{1}{3}} = (27\,\mathrm{cis}\,270)^{\frac{1}{3}}$

$= 27^{\frac{1}{3}}\,\mathrm{cis}\,270 \cdot \frac{1}{3}$

$= 3\,\mathrm{cis}\,90$

$= 3\,\mathrm{cis}\,210$

$= 3\,\mathrm{cis}\,330$



$27\,\mathrm{cis}(-90)$

$3\,\mathrm{cis}(-30)$

$x = 3\cos 90 = 0 \quad 0+1i$

$y = 3\sin 90 = 1$

$x = 3\cos 30 = \frac{3\sqrt{3}}{2} \quad \frac{3\sqrt{3}}{2} - \frac{3}{2}i$

$y = 3\sin 30 = \frac{3}{2}$

$x = 3\cos 30 \quad \frac{3\sqrt{3}}{2} - \frac{3}{2}i$ ★

$y = 3\sin 0$

Lesson 9-7 *(Pages 593–598)*

Find each product or quotient. Express the result in rectangular form.

1. $6\left(\cos \frac{\pi}{2} + i \sin \frac{\pi}{2}\right) \cdot 4\left(\cos \frac{\pi}{4} + i \sin \frac{\pi}{4}\right)$

2. $3\left(\cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4}\right) \div \frac{1}{2}(\cos \pi + i \sin \pi)$

Lesson 9-8 *(Pages 599–606)*

Find each power. Express the result in rectangular form.

1. $\left[4\left(\cos\frac{\pi}{2} + \boldsymbol{i}\sin\frac{\pi}{2}\right)\right]^4$

2. $(12\boldsymbol{i} - 5)^3$

Find each principal root. Express the result in the form $a + bi$ nearest hundredth.

3. $(1 + i)^{\frac{1}{3}}$

4. $(-1)^{\frac{1}{5}}$

Lesson 9-5 *(Pages 580–585)*

Simplify.

1. i^{-10}

2. i^{17}

5. $(4 - \boldsymbol{i}) + (-3 + 5\boldsymbol{i})$

7. $(3 + \boldsymbol{i})(5 - 3\boldsymbol{i})$

9. $(1 - \sqrt{2}i)(-3 - \sqrt{8}i)$

11. $\dfrac{6 + 2i}{-2 + i}$

Graph each number in the complex plane and find its absolute value.

2. $4 + i$

3. $-5i$

4.

Express each complex number in polar form.

5. $4 + 4i$

6. $-2 + i$