

4.22
28

p8 4.8 d 775
 $\arg z = 180$ $|z| = \frac{4}{3}$

4.22
29

$$z^2 - z + 1 = 0 \rightarrow z_{1,2} = \frac{1 \pm \sqrt{1-4}}{2} = \frac{1 \pm \sqrt{3}i}{2} = \begin{cases} \text{cis } 60 \\ \text{cis } 120 \end{cases}$$

$$z^{142} + \frac{1}{z^{142}} = (\text{cis } 60)^{142} + (\text{cis } (-60))^{142} = \text{cis } 240 + \text{cis } (-240)$$

$$= \cos 240 + j \sin 240 + \cos(-240) + j \sin(-240) = 2 \cos 240 = -1$$

$\text{cis } 120 = \text{cis } (-60)$'s 773 w/c 777 $\text{cis } 120$ 112077 2/28