a)

May 3, 2022

Find all polar reps. Indicate principal

q+15

 $r = \sqrt{(-1)^2 + (\sqrt{3})^2} = \sqrt{1+3} = 2$ $G=(sign \sqrt{3}).acos(\frac{-1}{2})$

All regris: 2 cis(3 + 2 TK)

Principal: 2 cis (21)

b) 2=5-5i

H= V52+(-5)2 = 5V2 6= (sign (-5)). acos (\$1/2)

All reps: 5-12 cis (-= +2 TK)

Printpal repr: 5-12 cis (-= +2 TK)

11 (S. 4) 84. 37.

9)
$$8 \text{ cis} \left(-\frac{3}{4}\right) = 8 \left[\cos\left(-\frac{3}{4}\right) + i\sin\left(-\frac{3}{4}\right)\right]$$

Igents, the expression and the contract states and so the contract of the con

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b)
$$5 \operatorname{cis}(-\frac{\pi}{6}) = 5 \left[\operatorname{cos}(-\frac{\pi}{6}) + i \sin(-\frac{\pi}{6}) \right]$$

= 5 [= +; (-=;)]

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7-9]

a)
$$(-1+i)^6 = (+2 - is \frac{3\pi}{4})^6$$

where we can assume that the following the state of the state of

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b)
$$(-1-\sqrt{3}i)^{7}$$

$$= \left[2 \text{ cis}\left(-\frac{2\pi}{3}i\right)\right]$$

$$= 2^{7} \text{ cis}\left(-\frac{14\pi}{3}i\right)^{2}$$

$$= 128\left[\cos\left(-\frac{14\pi}{3}i\right) + i\sin\left(-\frac{14\pi}{3}i\right)\right]$$

$$r = \sqrt{1+3} = 2$$

$$\theta = (-) \cdot aco \left(\frac{-1}{2}\right) = -\frac{2\pi}{3}$$

$$\frac{-14\pi}{3} + \frac{6\pi}{3} \cdot 3 = \frac{-14\pi + 15\pi}{3}$$

$$\frac{4\pi}{3}$$
 60° in \overline{M}

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to, and write converse or two formers of control of the control of

$$w = -81$$

$$= 81 \text{ cis } T$$

ad notinged superence
$$\frac{4}{4}$$
 $\frac{1}{4}$ $\frac{$

$$= \frac{3\sqrt{2}}{2} + \frac{3\sqrt{2}}{2}$$

noeß of
$$712$$
; $w = -125i = 125 \text{ cis } \frac{37}{2}$
 $-125i = 3\sqrt{w} = 3\sqrt{125} \text{ cis } \left(\frac{7}{2} + \frac{2\pi k}{3}\right)$

$$\frac{1}{2} + \frac{27}{3} = \frac{4\pi + 37}{6} = \frac{77}{6}$$

$$\frac{\pi}{1} + \frac{4\pi}{3} = \frac{8\pi + 3\pi}{6} = \frac{11\pi}{6}$$

=
$$5 \text{ cis}(\frac{\pi}{2})$$
, $5 \text{ cis}(\frac{2\pi}{6})$, $5 \text{ cis}(\frac{1\pi}{6})$

$$= 5', -\frac{5\sqrt{3}}{2} - \frac{5}{2}', \frac{5\sqrt{3}}{2} - \frac{5}{2}'$$

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$$Z^{2} - 97Z + 1296 = 0$$

$$(Z - 81)(Z - 16) = 0$$

$$(X^{4} - 81)(X^{4} - 16) = 0$$

$$X^{4} = 81 \qquad P \qquad X^{4} = 16 = 0$$

$$X = 3 \text{ cis } Z\pi k$$

$$= 3, 3 \text{ cis } Z\pi k$$

$$= 3, 3 \text{ cis } Z\pi k$$

$$= 3, 3 \text{ cis } Z\pi k$$

$$x = 2 cis \left(0 + \frac{x \pi k}{4}\right)$$

$$= 2, 2 cis \frac{\pi}{2}, 2 cis \pi, 2 cis \frac{3\pi}{2}$$

$$= 2, 2i, -2, -2i$$