) .

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

$$= 2$$

$$z = 2e^{xi}$$

$$\Theta = tan^{-1} \frac{\sqrt{3}}{1}$$

$$= \frac{\pi}{3} \quad z^{3} \quad z^{-3} \quad x^{2}$$

$$= \frac{\pi}{3} \quad z^{4} \quad x^{2} \quad x^{2}$$

$$= \frac{\pi}{3} \quad z^{4} \quad x^{2} \quad x^{2}$$

$$= \frac{\pi}{3} \quad z^{4} \quad x^{2} \quad x^{2}$$

$$z^2 = 1 + 2\sqrt{3}i - 3$$

= $-2 + 2\sqrt{3}i = 4e^{\frac{2\pi}{3}i}$

$$Z^{3} = (-2+2\sqrt{3}i)(1+\sqrt{3}i)$$

$$= -2+2\sqrt{3}i-2\sqrt{3}i+6i^{2}$$

$$= -8 = 8e^{in}$$

$$z^4 = -8 - 8 - 8 - 8 - 8 = 16e^{i\frac{4\pi}{3}}$$

$$Z^{-1} = \frac{1}{2}e^{-\frac{\pi}{2}i}$$

$$Z^{-1} = \frac{1}{4}e^{-\frac{2\pi}{2}i}$$

$$z^{-3} = \frac{1}{8}e^{-nz}$$

$$z^{-4} = \frac{1}{16}e^{-\frac{4n}{3}i}$$

 $= 2 = 2 \left(\cos \frac{\pi}{3} + 2 \sin \frac{\pi}{3} \right)$

2.
$$e^{+\sqrt{3}i}$$

$$e^{a+bi} = e^a \cdot e^{bi}$$

$$= e^a (cosb+isinb)$$

$$= e^a (cosb+ie^a sinb)$$

$$\Rightarrow e^{\alpha} = 2$$

$$a = \ln 2$$

$$a+bi=\ln 2+\frac{\pi}{3}i$$

$$n=2$$
, $2\ln 2 + \frac{2\pi}{3}$
 $n=2$, $2\ln 2 + \frac{2\pi}{3}$
 $n=3$, $2\ln 2 + \frac{2\pi}{3}$
 $n=4$, $2\ln 2 + \frac{2\pi}{3}$
 $n=4$, $2\ln 2 + \frac{2\pi}{3}$

$$n=3,$$
 ℓ_{1n^2+47}

$$n=0, \quad \int_{-\ln 2} -\pi i$$

$$n=-1$$
, 0 , $2x$.

$$n=-1$$
, $e^{-2\ln 2-\frac{2\pi}{3}i}$
 $n=-2$, $e^{-2\ln 2-\frac{2\pi}{3}i}$

$$n=-2$$
, $e^{-3h2-\pi i}$
 $n=-3$, $e^{-4\ln 2-\frac{4\pi}{3}i}$
 $n=-4$, $e^{-4\pi i}$