Practice

(1) Below is a table of complex numbers, some in the form $a + bi$ (rectangular coordinates) and the others in the form $r(cos\theta + isin\theta)$ (polar coordinates). Convert the ones in rectangular coordinates to polar and the reverse.

rectangular $(a + bi)$	polar $r(cos\theta + isin\theta)$
$1 - i$	
$3 + 3i$	
$1 + \sqrt{3}i$	
	$3(\cos(\frac{4\pi}{3}) + i\sin(\frac{4\pi}{3}))$
	$\sqrt{2}(\cos(\frac{3\pi}{4}) + i\sin(\frac{3\pi}{4}))$
	$\cos(\frac{7\pi}{6}) + i\sin(\frac{7\pi}{6})$

(2) Find all possible solutions to $x^4 = -i$.
(3) Find all possible solutions to $x^3 = -\sqrt{3} + i$.
(4) Prove that if a divides b and a divides c then a^2 divides bc.
(5) Disprove that if a^2 divides bc, then a divides b or a divides c.
(6) Prove that if 2^2 divides bc, then 2 divides b or 2 divides c.
(7) Prove that

$$\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \cdots + \frac{1}{n(n+1)} = \frac{n}{n+1}$$