A1, 1. ZH, 2015 MÁRC 6., C CSOPORT

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(1) a) $\underline{u} \cdot \underline{v} = |\underline{u}| \cdot |\underline{v}| \cdot \cos(\varphi)$

b) $\underline{u} \times \underline{v} =$

$= (u_2 \cdot v_3 - u_3 \cdot v_2 \,,\, u_3 \cdot v_1 - u_1 \cdot v_3 \,,\, u_1 \cdot v_2 - u_2 \cdot v_1)$

$|\underline{u} \times \underline{v}| =$

$$\sqrt{(u_2 \cdot v_3 - u_3 \cdot v_2)^2 + (u_3 \cdot v_1 - u_1 \cdot v_3)^2 + (u_1 \cdot v_2 - u_2 \cdot v_1)^2}$$

$$\cos(\varphi) = \frac{u \cdot v}{|\underline{u}| \cdot |\underline{v}|} = \frac{u_1 \cdot v_1 + u_2 \cdot v_2 + u_3 \cdot v_3}{\sqrt{u_1^2 + u_2^2 + u_3^2} \cdot \sqrt{v_1^2 + v_2^2 + v_3^2}}$$

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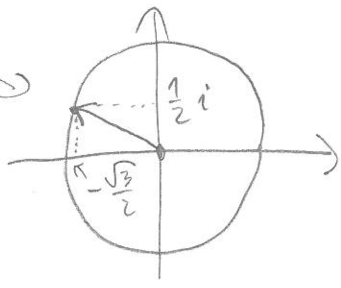
(2) $z = 2i - 2 \cdot \sqrt{3}$ $\quad |z| = \sqrt{2^2 + (2 \cdot \sqrt{3})^2} = 4 = r$

$\frac{z}{|z|} = -\frac{\sqrt{3}}{2} + \frac{1}{2} \cdot i \longrightarrow$



$\boxed{\varphi = 150^\circ = \frac{5}{6}\pi}$

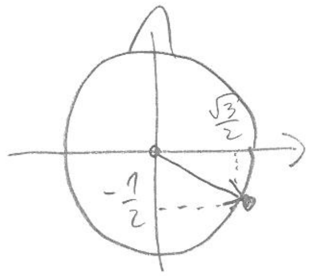
$z^7 = r^7 \cdot (\cos(7 \cdot \varphi) + i \cdot \sin(7 \cdot \varphi)) =$

$= 4^7 \cdot \left(\cos\left(\frac{35}{6} \cdot \pi\right) + i \cdot \sin\left(\frac{35}{6}\pi\right)\right) =$

1. OLDAL

$$\frac{35}{6}\pi = \frac{30}{6}\pi + \frac{5}{6}\pi = 5\pi + \frac{5}{6}\pi = 4\pi + \frac{11}{6}\pi$$

$$= 6\pi - \frac{1}{6}\pi \longrightarrow$$



$$\star = 4^7 \cdot \left(\frac{\sqrt{3}}{2} - \frac{1}{2} i\right) = 2^{13} \cdot \sqrt{3} - 2^{13} \cdot i$$

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(3) LÁSD SZKENNELT JEGYZET 19.-20. OLD.

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(4) $$\lim_{n\to\infty} a_n = \lim_{n\to\infty} \frac{2n^2-3}{12n^2-6} = \frac{2}{12} = \frac{1}{6} = A$$

KELL: LEGKISEBB N, AMIRE: $\boxed{n \geq N} \Rightarrow \boxed{|a_n - A| < \varepsilon}$

AZAZ: $$\left|\frac{2n^2-3}{12n^2-6} - \frac{1}{6}\right| < \frac{1}{6\cdot 10^4}$$ KELL

$$\boxed{\left|\frac{(2n^2-3)-(2n^2-1)}{12n^2-6}\right| < \frac{1}{6\cdot 10^4}} \quad \boxed{\frac{2}{12n^2-6} < \frac{1}{6\cdot 10^4}}$$

$$\boxed{12\cdot 10^4 < 12n^2 - 6} \quad \boxed{\frac{12\cdot 10^4 + 6}{12} < n^2}$$

KELL

$$\boxed{10^4 + \frac{1}{2} < n^2} \Rightarrow \boxed{n \geq 101} \Rightarrow \boxed{N = 101}$$

2. OLDAL