$\boxed{\begin{matrix}3.87\\ ח\end{matrix}}$

לפי הבינום $\cos^5\alpha+5i\cos^4\alpha\cdot\sin\alpha-10\cos^3\alpha\sin^2\alpha-10i\cos^2\alpha\sin^3\alpha$

$+5\cos\alpha\sin^4\alpha+i\sin^5\alpha$

לפי דה מואבר $(\cos\alpha+i\sin\alpha)^5=(\text{cis}\,\alpha)^5=\text{cis}(5\alpha)=\cos5\alpha+i\sin5\alpha$

נשווה חלקים ממשיים $\cos5\alpha=\cos^5\alpha-10\cos^3\alpha\sin^2\alpha+5\cos\alpha\sin^4\alpha=$

$=\cos^5\alpha-10\cos^3\alpha(1-\cos^2\alpha)+5\cos\alpha(1-\cos^2\alpha)^2=$

$=\cos^5\alpha-10\cos^3\alpha+10\cos^5\alpha+5\cos\alpha-10\cos^3\alpha+5\cos^5\alpha=$

$=16\cos^5\alpha-20\cos^3\alpha+5\cos\alpha$

3.87 9א

$2\cos\alpha=z+\frac{1}{z}\quad/\cdot z$

$z^2-2z\cos\alpha+1=0$

$z_{1,2}=\frac{2\cos\alpha\pm\sqrt{4\cos^2\alpha-4}}{2}=\frac{2\cos\alpha\pm2\sqrt{\cos^2\alpha-1}}{2}=\cos\alpha\pm i\sin\alpha$ → $\text{cis}\,\alpha$, → $\text{cis}(-\alpha)$

$z^n+\frac{1}{z^n}=$ → $(\text{cis}\,\alpha)^n+\frac{1}{(\text{cis}\,\alpha)^n}=\text{cis}(\alpha n)+\text{cis}(-\alpha n)$

$=\cos(\alpha n)+\cancel{i\sin(\alpha n)}+\cos(-\alpha n)+\cancel{i\sin(-\alpha n)}$

$=2\cos(\alpha n)$

→ $(\text{cis}(-\alpha))^n+\frac{1}{(\text{cis}(-\alpha))^n}=2\cos(\alpha n)$