Exponential Representation Of the Hyperbolic Cosine And Sine Functions, Are

$$\cosh(x) = \frac{e^x + e^{-x}}{2} \quad \text{And} \quad \sinh(x) = \frac{e^x - e^{-x}}{2},$$ As Well As the Cosine And Sine Of An

Angle   Sum,   Are $\cos(A+B) = \cos A \cos B - \sin A \sin B$ And

$\sin(A+B) = \sin A \cos B + \sin B \cos A$. **In a), Show the Sine And Cosine Of a**

Complex Argument Results Asked For By Direct Substitution Using the

Generalized Cosine and Sine Formulas, And Then Show That the Result Can Be

Obtained Quickly Using the Cosine and Sine Of Sum Formulas. After Proving

b), Give the Square Magnitudes Of the Sine And Cosine Functions For $z = iy$,

And Show That the Results On the Imaginary Axis Can Be Greater Than 1.

Finally, c) Give the Zeros, z **Values, Of** $\sin(z)$ **And** $\cos(z)$ **Functions, In the** z

Complex Plane, And State Your Conclusion.