

4. Arfken, p. 396, (5th Ed.), p. 411 (6th Ed.), Prob. 6.1.10. Note That Your Previous Euler Formula Result Can Be Generalized To Include a Complex Number, $z = x + iy$, For x, y Real, If We Define the Generalized Exponential, e^{iz} , Cosine, $\cos(z)$, And Sine, $\sin(z)$, Functions Using the Usual Taylor Series Formulas, So That $e^{iz} = \cos(z) + i \sin(z)$, Which Can Then Be Used To Derive the Generalized Cosine and Sine Formulas, $\cos(z) = \frac{e^{iz} + e^{-iz}}{2}$ And $\sin(z) = \frac{e^{iz} - e^{-iz}}{2i}$. Recall That the