HOMEWORK #15 prob 5 solution

EX: Differentiate both sides of Euler's formula to obtain an identity for the derivative of a complex exponential in terms of cosine and/or sine functions.

SOL'N: Taking the derivative is the same as multiplying by j:

$$\frac{de^{jx}}{dx} = je^{jx} = j(\cos x + j\sin x) = -\sin x + j\cos x$$