

1. [6pts] Show that on $(-\infty, \infty)$, the functions $\sin^2 x$, $\cos^2 x$ are linearly independent but that the functions $\sin^2 x$, $\cos^2 x$, $\cos 2x$ are linearly dependent.

2. [6pts] Find an integrating factor for the DE $y' + ye^x = e^x$ and solve it.