Quiz 2 Math 301 Duration 20 minutes ID: ..... Name:

Q1- Find the Laplace transform of the following functions:

a- $f(t) = \cos^2(t)$
b- $f(t) = \mathrm{e}^{-2t}\cos(4t)$
c- $f(t) = t\sinh t$.
d- $f(t) = 1 * t^3$
e- $f(t) = \begin{cases} \sin(t), & 0 \le t \le \pi \\ 0, & t \ge \pi. \end{cases}$

Q2- Find the inverse transform of the functions:

a- $\mathscr{L}^{-1}\left\{\frac{4s}{4s^2+1}\right\}$
b- $\mathscr{L}^{-1}\left\{\frac{s}{s^2+2s-3}\right\}$

Q3- Use Laplace transform to solve the initial value problem: $y'' - 4y' + 4y = t^3\mathrm{e}^{2t}, y(0) = 0, y'(0) = 0.$