

Name _____

1. Use the method of variation of parameters to solve the following:

a) $y'' - y' - 2y = 3x + 4$

b) $y'' + y = \tan x$

2. Verify $\Im\{c\} = \frac{c}{s}$ where c is any real number.

3. Answer the following:

a) $\Im\{(1-x^2)e^{-x}\} =$

b) $\Im\left\{\frac{\sin 3t}{t}\right\} =$

c) Why is there no $\Im\{\tan x\}$?

4. Find

a) $\mathfrak{F}^{-1} \left\{ \frac{2s}{(s^2 + 1)^2} \right\}$

b) $\mathfrak{F}^{-1} \left\{ \frac{4}{s^2(s^2 + 4)} \right\}$

c) $\mathfrak{F}^{-1} \left\{ \frac{15}{s^2 + 8s + 23} \right\}$

5. Solve the following using the Laplace transform:

a) $y' - 5y = e^{5x}$; $y(0) = 0$

b) problem **1a)** above, with $y(0) = 0$ and $y'(0) = 1$