

Make sure your name is on each page and the assignment is stapled. Thanks and enjoy. These problems are worth 2pts a piece (this makes 40 total points)

Problem 1 Calculate the Laplace transforms of $f(t) = \sin(t) \cos(2t) + \sin^2(3t)$.

Problem 2 Calculate the Laplace transforms of $f(t) = e^t u(t - 3) + \sin(t) u(t - 6)$.

Problem 3 Calculate the Laplace transforms of the following function:

$$f(t) = \begin{cases} t, & 0 \leq t \leq 2 \\ \sin(t) & t > 2 \end{cases}.$$

Problem 4 Calculate the Laplace transform of the following function:

$$f(t) = te^{-2t} + t \sin(t)$$

Problem 5 Compute the inverse Laplace transform of

$$F(s) = \frac{3s + 9}{s^2 - 8s + 7}$$

Problem 6 Compute the inverse Laplace transform of

$$F(s) = \frac{e^{-2s}}{s(s^2 + 6s + 13)}$$

Problem 7 Compute the inverse Laplace transform of

$$F(s) = \frac{4s}{s^4 - 1}$$

Problem 8 Problem 33 from page 375 of Nagel Saff and Snider (6th ed.)

Problem 9 Problem 3 from page 383 of Nagel Saff and Snider (6th ed.)

Problem 10 Problem 7 from page 383 of Nagel Saff and Snider (6th ed.)

Problem 11 Problem 11 from page 383 of Nagel Saff and Snider (6th ed.)

Problem 12 Problem 29 from page 384 of Nagel Saff and Snider (6th ed.)

Problem 13 Problem 20 from page 396 of Nagel Saff and Snider (6th ed.)

Problem 14 Problem 35 from page 396 of Nagel Saff and Snider (6th ed.)

Problem 15 Problem 37 from page 397 of Nagel Saff and Snider (6th ed.)

Problem 16 Problem 10 from page 405 of Nagel Saff and Snider (6th ed.)

Problem 17 Problem 27 from page 406 of Nagel Saff and Snider (6th ed.)

Problem 18 Problem 13 from page 413 of Nagel Saff and Snider (6th ed.)

Problem 19 Problem 17 from page 413 of Nagel Saff and Snider (6th ed.)

Problem 20 Problem 25 from page 413 of Nagel Saff and Snider (6th ed.)