1. A 32 pound weight stretches a spring 2 Feet. The mass is then released from an initial position of 1 foot below the equilibrium position. The surrounding medium offers a damping force of 8 times the instantaneous velocity. Find the equation of motion if the mass is driven by an external force of 2cos5t.
2. Solve the system where X and Y are functions of t:

dx/dt = 4x - y

dy/dt = 2x + y

1. dx/dt + 3x + dy/dt = 1 x(0) = 0

dx/dt – x + dy/dt - y = e^t y(0) = 0

1. Use Laplace Transforms to solve the system where X and Y are functions of t:

dx/dt – 5x – 4y = 0 x(0) = 1

1. Dy/dt + x – y = 0 y(0) = -1