

Math 3336
Spring 2005
Pretest III

1. Find the inverse Laplace transform of

$$\frac{4}{3s^2 - 6s + 8}$$

Answer: $\frac{4\sqrt{15}}{15}e^t \sin\left(\sqrt{\frac{5}{3}}t\right)$

2. Solve the initial value problem

$$x'' + x = e^{3t}, \quad x(0) = 2, \quad x'(0) = -1$$

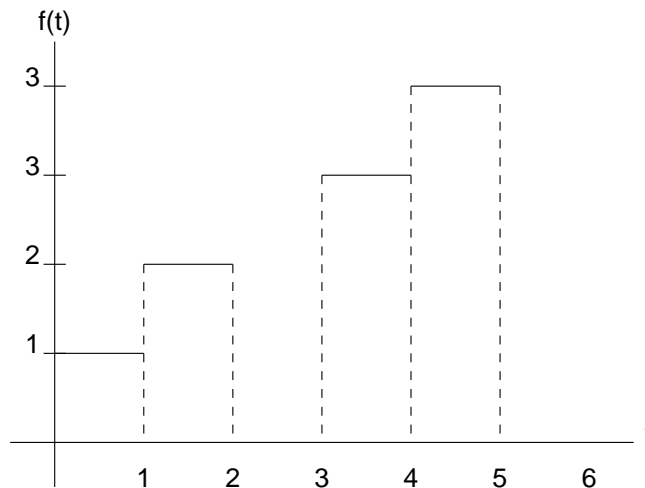
Answer: $x(t) = \frac{1}{10}e^{3t} - \frac{7}{10}\sin t + \frac{19}{10}\cos t$

3. Solve the initial value problem

$$x' = -2x + 3e^{-3t}, \quad x(0) = 2$$

Answer: $x(t) = 5e^{-2t} - 3e^{-3t}$

4. Find the Laplace transform of the function depicted in the graph



Answer: $\left(\frac{1}{s(1 - e^{-s})}\right)$