

Name: \_\_\_\_\_

- **Directions:** Show all work. No credit for answers without work.
- **Solution to part (a) purchased (Max. score = 8):** \_\_\_\_\_

1. The Laplace Transform.

- (a) [
- 5 points**
- ] Find the Laplace transform
- $X(s)$
- of the solution
- $x(t)$
- to the following IVP.

$$x'' + 8x' + 15x = 1; x(0) = 2, x'(0) = -3$$

Express  $X(s)$  as a ratio  $\frac{F(s)}{G(s)}$  for some functions  $F(s)$  and  $G(s)$ .

- (b) [5 points] Find the inverse Laplace transform of  $X(s)$ . **Note:** you may purchase  $X(s)$ . If you purchase  $X(s)$ , then your quiz will be graded as usual, except that your maximum score will be capped at 8 points out of 10.