

**MA 16020 LESSON 10: FIRST-ORDER LINEAR
DIFFERENTIAL EQUATIONS
(PROBLEM SET)**

Example 1: Find the general solution of the given differential equation

$$(x - 7)y' + y = x^2 - 10$$

Example 2: Jill owns an electronics store with storage capacity for 70 iPads. She currently has 55 iPads in inventory and determines that they are selling at a daily rate equal to 14% of the available capacity. When will Jill sell out of iPads? (Round to the third decimal place.)

Example 3: A corporation is initially worth 5 million dollars and is growing in value, V , by 26% each year, and is additionally gaining 20% of a growing market estimated at

$$100e^{0.26t} \text{ million dollars}$$

where t is the number of years the company has existed. Approximated the value of the company after 6 years. (Round to the nearest dollar.)