FOM 12 **7.3 – Modelling Data Using Exponential Functions**

(Remember in chapter 6 we made Regression Functions (lines and curves of best fit) to model data)

Example 1: Use technology to determine the exponential regression function that models this data

x	y
0	3
1	6.2
2	11.9
3	23.4
4	49.1

Enter Data: **STAT** 1: Edit

Create Function: **STAT** ➡ "CALC" 0: ExpReg

ENTER **ENTER**

$y = a * b^x$

$a = 3.020803825$

$b = 1.997443319$

$\boxed{y = 3.02(2.0)^x}$

Example 2: (Pg. 455) The population of Canada from 1871 to 1971 is shown in the table below.

Year	Population of Canada (millions)
1871	2.44
1881	3.23
1891	3.74
1901	5.42
1911	7.22
1921	8.80
1931	10.38
1941	11.51
1951	14.01
1961	18.24
1971	21.57

Statistics Canada

use 0, 1, 2, 3, ... to represent the number of 10-year intervals after 1871.

a) Use technology to create a graphical model and an algebraic exponential model for the data.

$y = a * b^x$

$a = 2.66854$

$b = 1.23989$

$\boxed{y = 2.67(1.24)^x}$

b) Assuming that the population growth continued at the same rate to 2011, estimate the population in 2011. Round your answer to the nearest million.

Find x-value: $\frac{2011-1871}{10} = \frac{140}{10} = 14$

$y = 2.67(1.24)^{14}$

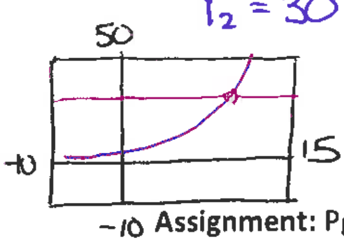
$y = 54.25$

Population would be about 54 million in 2011

c) In which year would the population of Canada be about 30 million?

Graph: $Y_1 = 2.67(1.24)^x$

$Y_2 = 30$



Find Intersection.

when $y = 30$

$x = 11.246$

This is about 11.2 groups of 10 years after 1871

$10 \times 11.2 = 112$ ∴

112 years after 1871

= 1983 is when the population would be around 30 million

Assignment: Pg. 461 #2, 3 – 13 (odds) (Extension #18, 19)