MATHEMATICS APPLIED (MTA315109)

2012 External Examination Information Sheet

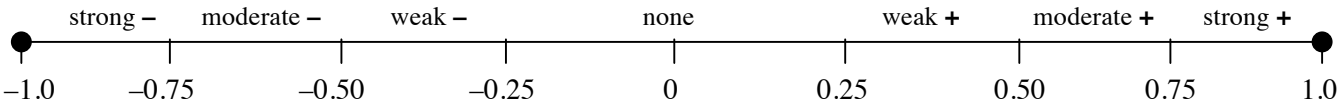
Algebraic Modelling

Gradient $a = \frac{y_2 - y_1}{x_2 - x_1}$

Straight Line: $y = ax + b$

Point / gradient formula $y - y_1 = a(x - x_1)$

Correlation coefficient (r)



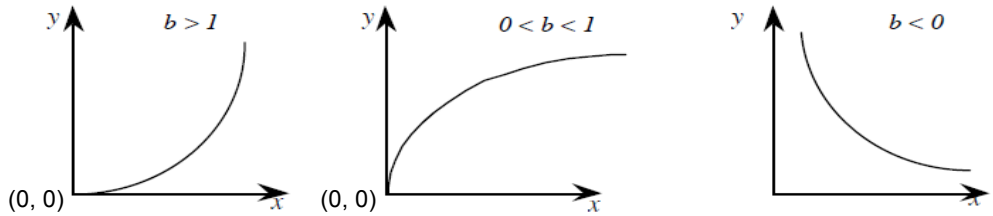
Coefficient of determination (r^2 = proportion)

%p in the variation in "***y***" can be associated with the variation in "***x***"

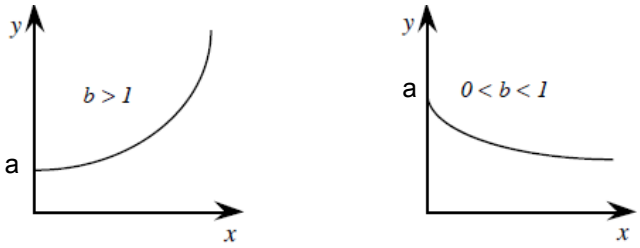
1

Non–Linear Algebraic Models

Power regression model - $y = ax^b$



Exponential regression model: $y = ab^x$ (or $y = ae^{bx}$)



2

Making predictions based on algebraic models

Reliable – within data points – interpolation
– points lie close to trend line

Unreliable – beyond date points – extrapolation
– points do not lie close to trend line

Residuals - distance each data point is away from modelled function

- pattern or random distribution?
- large deviations at one end?
- even number of points around the x- axis?
- small in magnitude in comparison to original data?