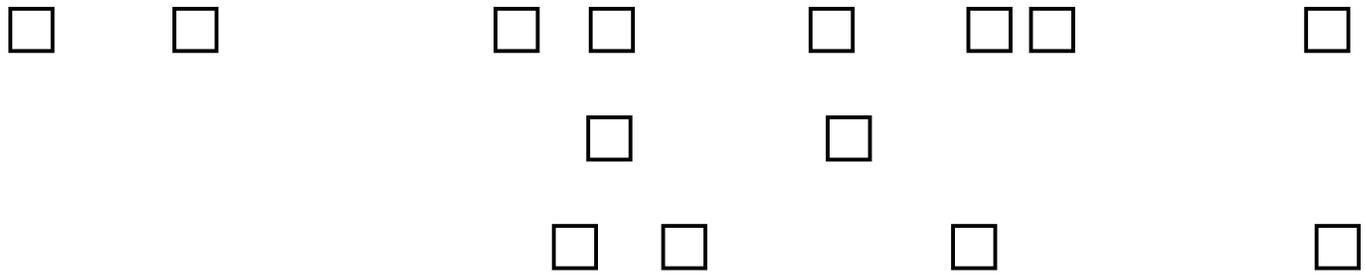
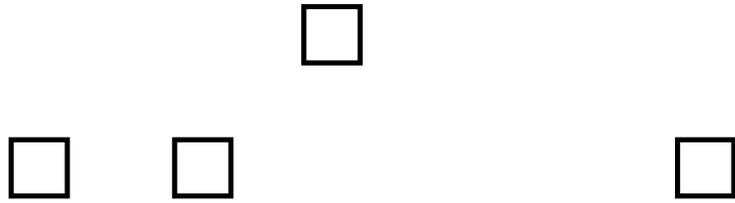


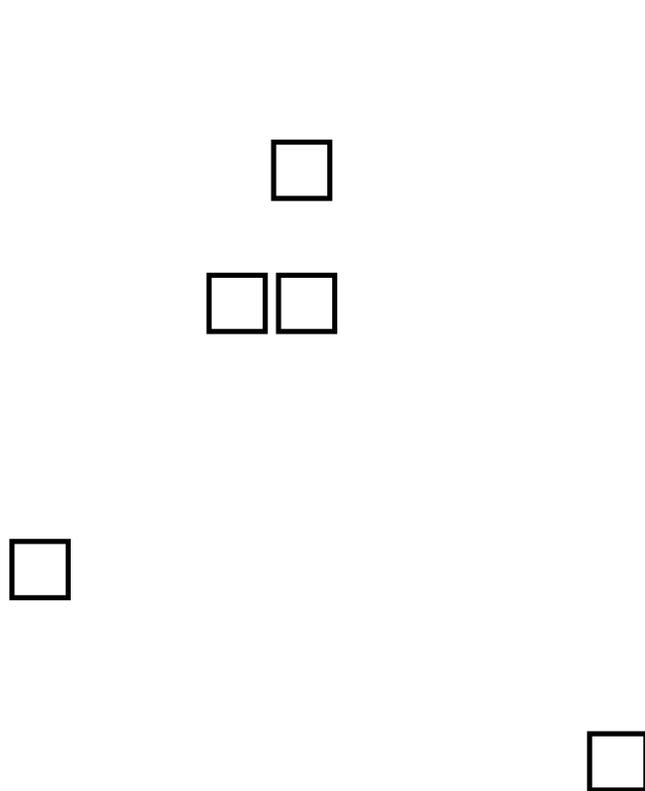
# Aligning Assessment for Aspiring Actuaries

# Alignment

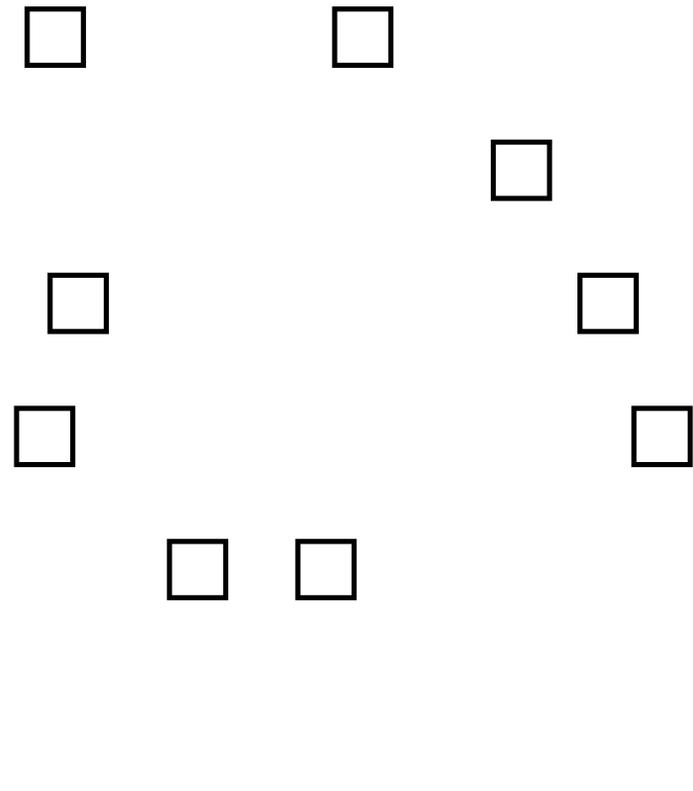


# Learning Outcomes for Actuaries

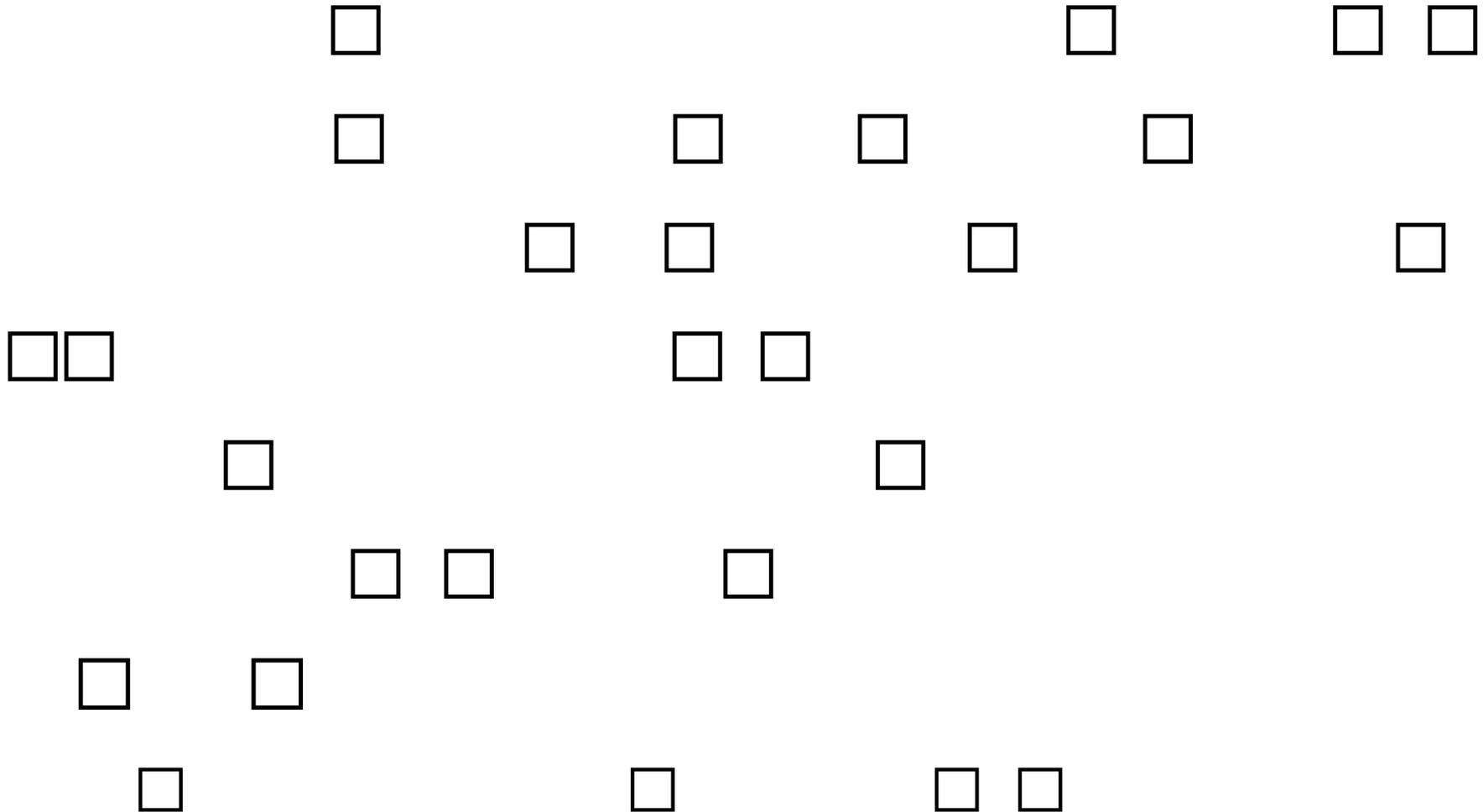
## Professional Skills



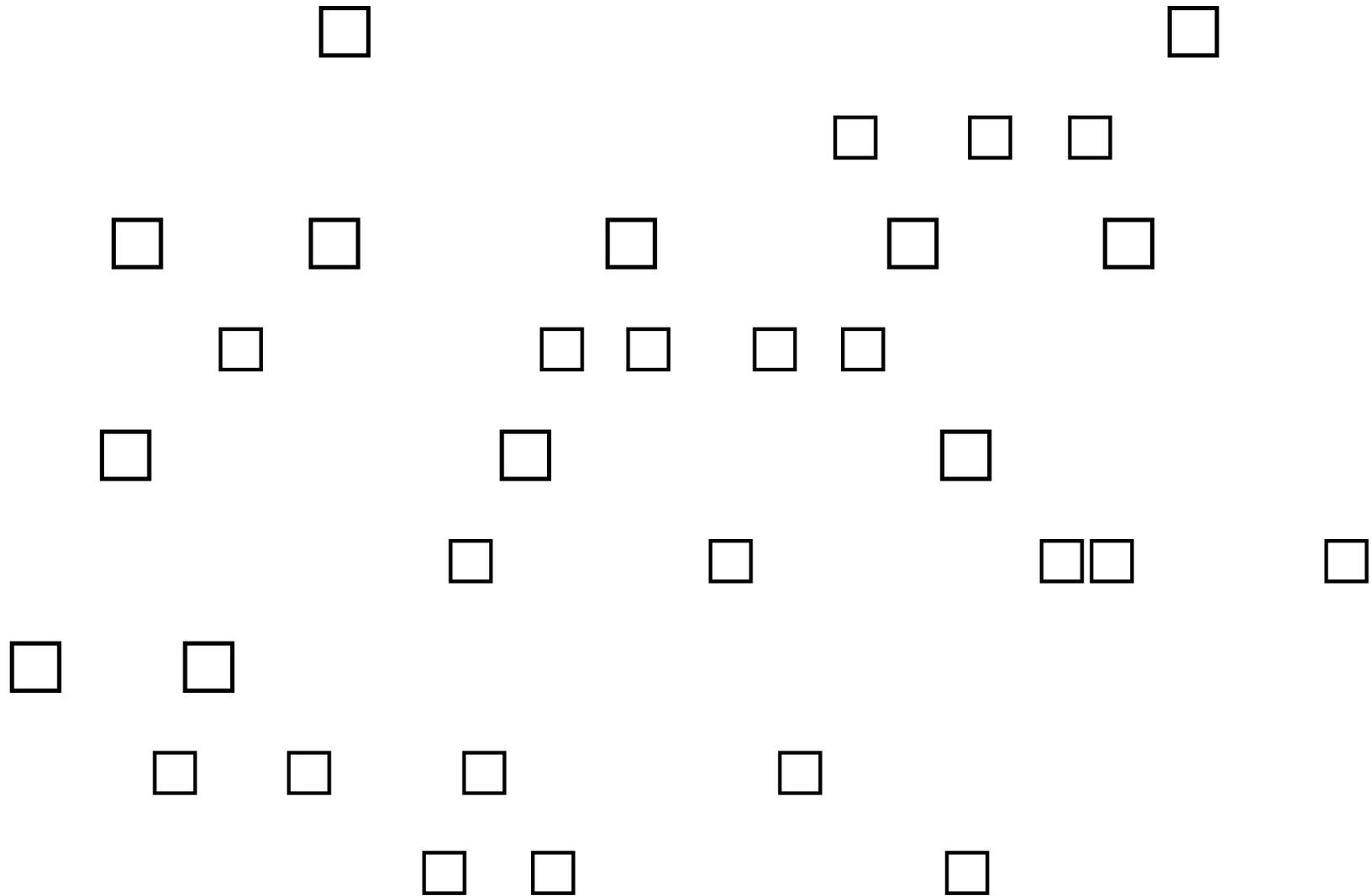
## Technical Skills



# Assignments/Tests/Exams



# Group Projects



# Reports





# Reflective Writing





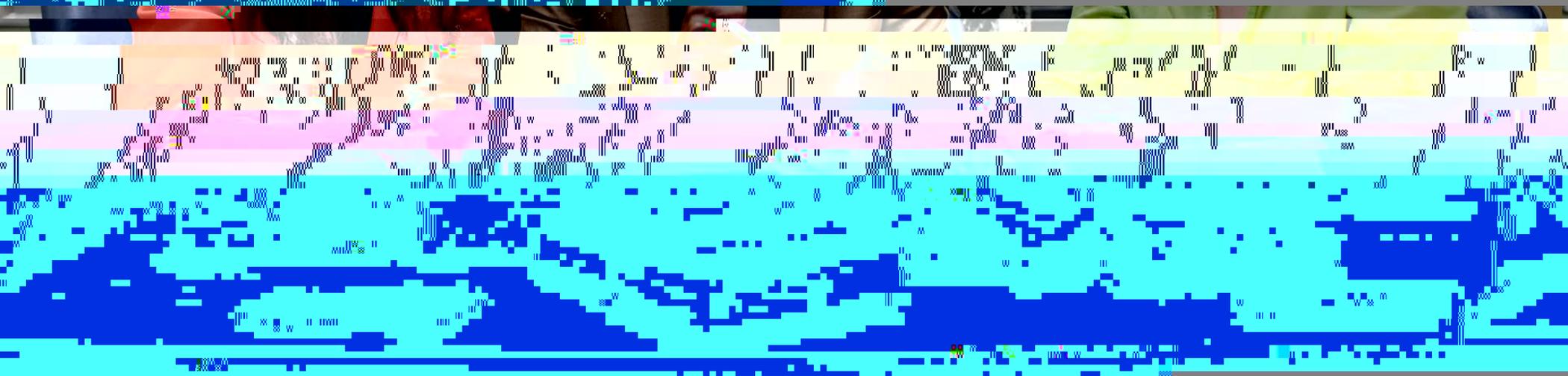
# How Can You Use These Ideas?



dkchisho@uwaterloo.ca

@ActSciProf on Twitter

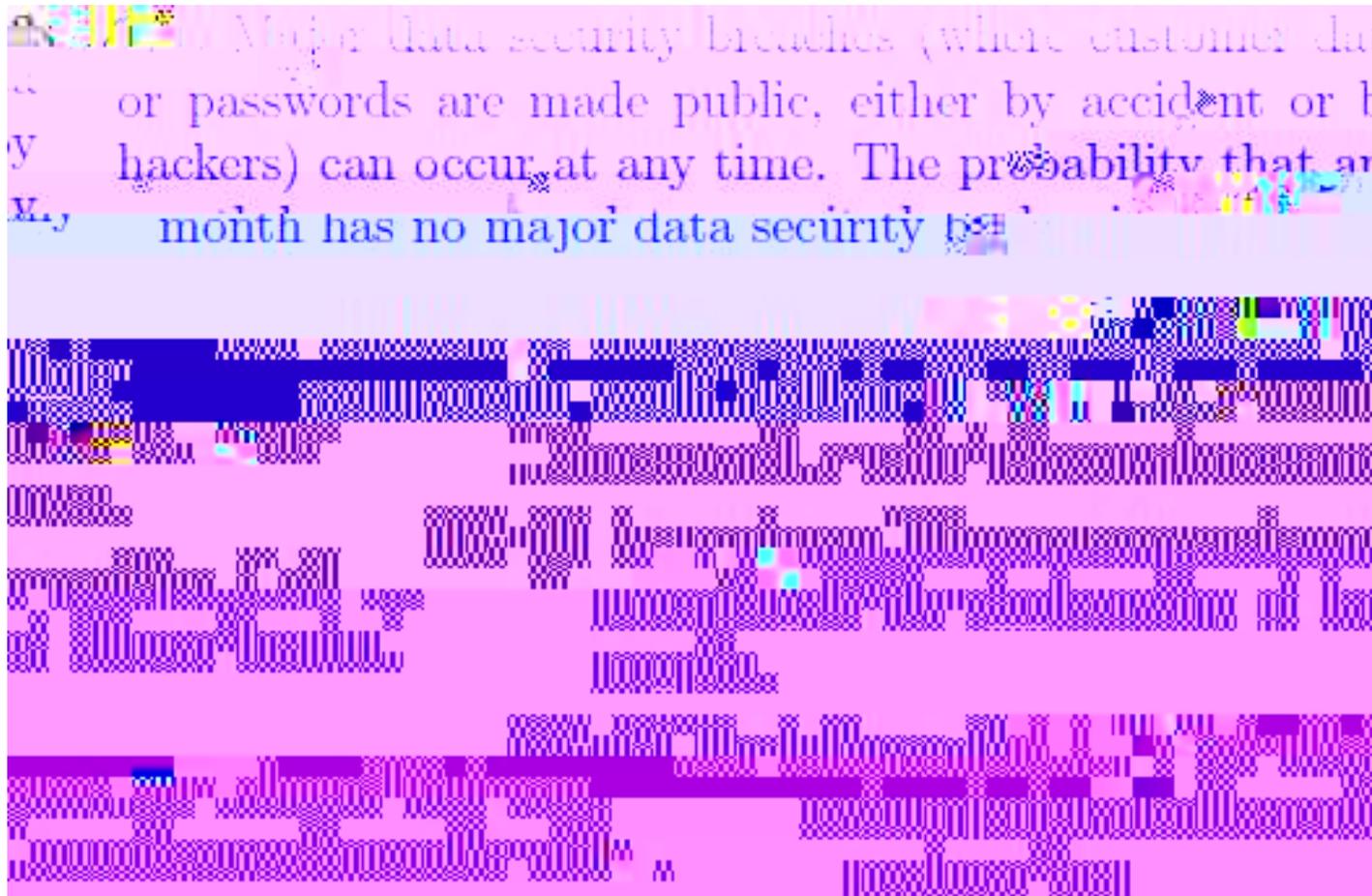
[uwaterloo.ca/scholar/dkchisho/blog](http://uwaterloo.ca/scholar/dkchisho/blog)



# Appendix- Additional examples and assessment types



# Example 1- Probability (STAT230)



# Example 2- Financial Math (ACTSC 231)

5. [10 marks] The number of fruit flies in a lab grows at a constant daily force  $\delta = 0.2$ . There are 10,000 fruit flies in the lab at 9:00 am today.

(a) [3 marks]



# Example 3- Life Cons 1 (ACTSC232)

1. [16 marks] The survival function for a life age 0 is given by  $S_0(x) = \frac{\beta - x}{\beta} e^{-\alpha x}$ , where  $\alpha, \beta > 0$ .

(a) [6 marks] Verify that  $S_0(x)$  satisfies the three conditions to be a valid survival function, and briefly justify why each condition makes sense.

(b) [3 marks] Show that the function  $f(x) = \frac{1}{\beta} e^{-\alpha x}$  is a probability density function.

# Example 4 – Life Cons 2 (ACTSC331)

2. A life age 50 buys a fully discrete 20 year term insurance policy with sum insured 100,000. The interest assumption is  $i = 0.05$  and the mortality assumption is  $q_{50+t} = 0.01$  for  $t = 0, 1, \dots, 19$ .

**(a)** Calculate the net level annual premium  $P$  for this policy.

**(b)** Calculate the net level annual premium  $P$  for this policy if the interest assumption is  $i = 0.06$  and the mortality assumption is  $q_{50+t} = 0.01$  for  $t = 0, 1, \dots, 19$ .

**(c)** Calculate the net level annual premium  $P$  for this policy if the interest assumption is  $i = 0.05$  and the mortality assumption is  $q_{50+t} = 0.02$  for  $t = 0, 1, \dots, 19$ .

**(d)** Calculate the net level annual premium  $P$  for this policy if the interest assumption is  $i = 0.05$  and the mortality assumption is  $q_{50+t} = 0.01$  for  $t = 0, 1, \dots, 19$  and the sum insured is 200,000.



# Example 6- Time Series (STAT443)

6 ARCH/GARCH

(a) [6] How can we tell that an ARCH/GARCH model might be appropriate for a time series? Discuss features that ARCH/GARCH models are designed to capture.

