

IT2120 - Probability and Statistics

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Exercise 1

```
> a <- 0
> b <- 40
> x1 <- 10
> x2 <- 25
> prob1 <- (x2 - x1) / (b - a)
> cat("Exercise 1: Probability =", prob1, "\n")
Exercise 1: Probability = 0.375
```

Exercise 2

```
> lambda <- 1/3
> time <- 2
> prob2 <- pexp(time, rate = lambda)
> cat("Exercise 2: Probability =", prob2, "\n")
Exercise 2: Probability = 0.4865829
```

Exercise 3

```
> mean_iq <- 100
> sd_iq <- 15
> prob3_i <- 1 - pnorm(130, mean = mean_iq, sd = sd_iq)
> cat("Exercise 3 (i): Probability IQ > 130 =", prob3_i, "\n")
Exercise 3 (i): Probability IQ > 130 = 0.02275013
> iq_95 <- qnorm(0.95, mean = mean_iq, sd = sd_iq)
> cat("Exercise 3 (ii): 95th Percentile IQ =", iq_95, "\n")
Exercise 3 (ii): 95th Percentile IQ = 124.6728
```