IT2120 - Probability and Statistics

Lab Sheet 06

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01)

```
#Question 1
## 1) Uniform(0, 40) minutes: P(10 ≤ X ≤ 25)
p1 <- punif(25, min = 0, max = 40) - punif(10, min = 0, max = 40)
p1
```

```
> #Question 1
> ## 1) Uniform(0, 40) minutes: P(10 ≤ X ≤ 25)
> p1 <- punif(25, min = 0, max = 40) - punif(10, min = 0, max = 40)
> p1
[1] 0.375
```

02)

```
#Question 2
#Exponential rate λ = 1/3 per hour: P(t ≤ 2)
p2 <- pexp(q = 2, rate = 1/3)
p2
```

```
> #Question 2
> #Exponential rate λ = 1/3 per hour: P(t ≤ 2)
> p2 <- pexp(q = 2, rate = 1/3)
> p2
[1] 0.4865829
```

03) i)

```
#Question 3
#Normal(μ = 100, σ = 15)
#part (i) P(X > 130)
p3_i <- 1 - pnorm(130, mean = 100, sd = 15)
p3_i
```

```
> #Question 3
> #Normal(μ = 100, σ = 15)
> #part (i) P(X > 130)
> p3_i <- 1 - pnorm(130, mean = 100, sd = 15)
> p3_i
[1] 0.02275013
```

ii)

```r
#part(ii) 95th percentile
q3_ii <- qnorm(0.95, mean = 100, sd = 15)
q3_ii
```

```
> #part(ii) 95th percentile
> q3_ii <- qnorm(0.95, mean = 100, sd = 15)
> q3_ii
[1] 124.6728
```