Statistics 3080
Homework 6
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Problem 3a

```
> set.seed(7311986)
> pop_mean <- 77
> pop_sd <- 31
> n.15 <- 15
> n.30 <- 30
> n.45 <- 45
> z_crit <- abs(qnorm(0.025))
> samp.15 <- replicate(10000, rnorm(n.15, mean=pop_mean, sd=pop_sd))
> samp.30 <- replicate(10000, rnorm(n.30, mean=pop_mean, sd=pop_sd))
> samp.45 <- replicate(10000, rnorm(n.45, mean=pop_mean, sd=pop_sd))
> x_bar.15 <- apply(samp.15, MARGIN=2, FUN=mean)
> x_bar.30 <- apply(samp.30, MARGIN=2, FUN=mean)
> x_bar.45 <- apply(samp.45, MARGIN=2, FUN=mean)
> z.15 <- abs((x_bar.15 - pop_mean) / (pop_sd/sqrt(n.15)))
> z.30 <- abs((x_bar.30 - pop_mean) / (pop_sd/sqrt(n.30)))
> z.45 <- abs((x_bar.45 - pop_mean) / (pop_sd/sqrt(n.45)))
> reject.15 <- z.15 > z_crit
> reject.30 <- z.30 > z_crit
> reject.45 <- z.45 > z_crit
```

Problem 3b

```
> mean(reject.15)

[1] 0.0489

> mean(reject.30)

[1] 0.0497

> mean(reject.45)

[1] 0.0481
```

References:

- None