

# Problem Set 5

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## Question 1

```
ps5_1 <- data.frame(  
  decade=c("1960s", "1970s", "1980s", "1990s"),  
  r=c(0.024, 0.026, 0.029, 0.035),  
  G_lower = 25,  
  G_upper = 33  
)  
ps5_1 <- ps5_1 %>% mutate(lower_bound=exp(r*G_lower), upper_bound=exp(r*G_upper))  
knitr::kable(ps5_1)
```

| decade | r     | G_lower | G_upper | lower_bound | upper_bound |
|--------|-------|---------|---------|-------------|-------------|
| 1960s  | 0.024 | 25      | 33      | 1.822119    | 2.207808    |
| 1970s  | 0.026 | 25      | 33      | 1.915541    | 2.358439    |
| 1980s  | 0.029 | 25      | 33      | 2.064731    | 2.603873    |
| 1990s  | 0.035 | 25      | 33      | 2.398875    | 3.174023    |

## Question 2

```
ps5_4 <- tibble(  
  x=c(15, 20, 25, 30, 35, 40, 45),  
  nBx=c(7150, 21910, 25305, 14825, 9935, 3625, 1420),  
  nDx=c(578, 502, 1034, 659, 638, 441, 638),  
  nKx=c(48564, 67096, 80746, 53670, 51975, 32022, 32307),  
  nLx=c(337775, 321570, 306003, 287031, 270049, 253276, 232925)  
)
```