MA391 Project HW
WK 2
Problem 1

github.com/skchinn/
R code at: MA391HomeworkSubmission

Part A) $\lambda = 3$ $w = .25$ In 39 hours RED wins and has 2.2 remaining divisions.

Part B) [redacted]
$w = .1 \ldots .75$ [redacted] RED wins in 131 hours with 0.4 divisions remaining.

Part C) BLUE benefits from adverse weather. I would expect RED to attack on a sunny day.

Part D) [redacted] weapon superiority is not the most important factor to analyze in this situation. As we saw in Part C, RED and BLUE seem to be most greatly disadvantaged and advantaged, due to weather conditions.

Problem 2

Part A) In R

Part B) If the commander holds out until the 2nd day, RED wins and has 2.9 remaining divisions. If the commander holds out until the 3rd day, it takes 26 hours but RED will still win with 2.6 remaining divisions.

Part C) All forces on first day: RED wins, 9 hours, 3.7 remaining divisions (This is the best scenario)
- minimum loss of manpower

Part D) $\lambda = 1.0 \ldots 6.0$ Even when adjusting weapon superiority RED is projected to win (assuming they listen to Part C and do not hold forces).

Problem 3

.7 RED .35 BLUE

Part A) BLUE wins the battle after 9 hours with 0.9 remaining divisions. BLUE benefits because they win, unlike Problem 2 Part D, where RED was projected to win.

Part B) RED wins in 16 hours and has 0.7 remaining divisions. BLUE benefits because they survive longer while having fewer casualties.
Part C) BLUE will win if they strike immediately. Otherwise they will continue to lose to RED.
Part D) $\lambda = 1.0 \ldots 6.0$ Code in R