

# PPHA 44330: Computational Problem Set

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## Problem 1

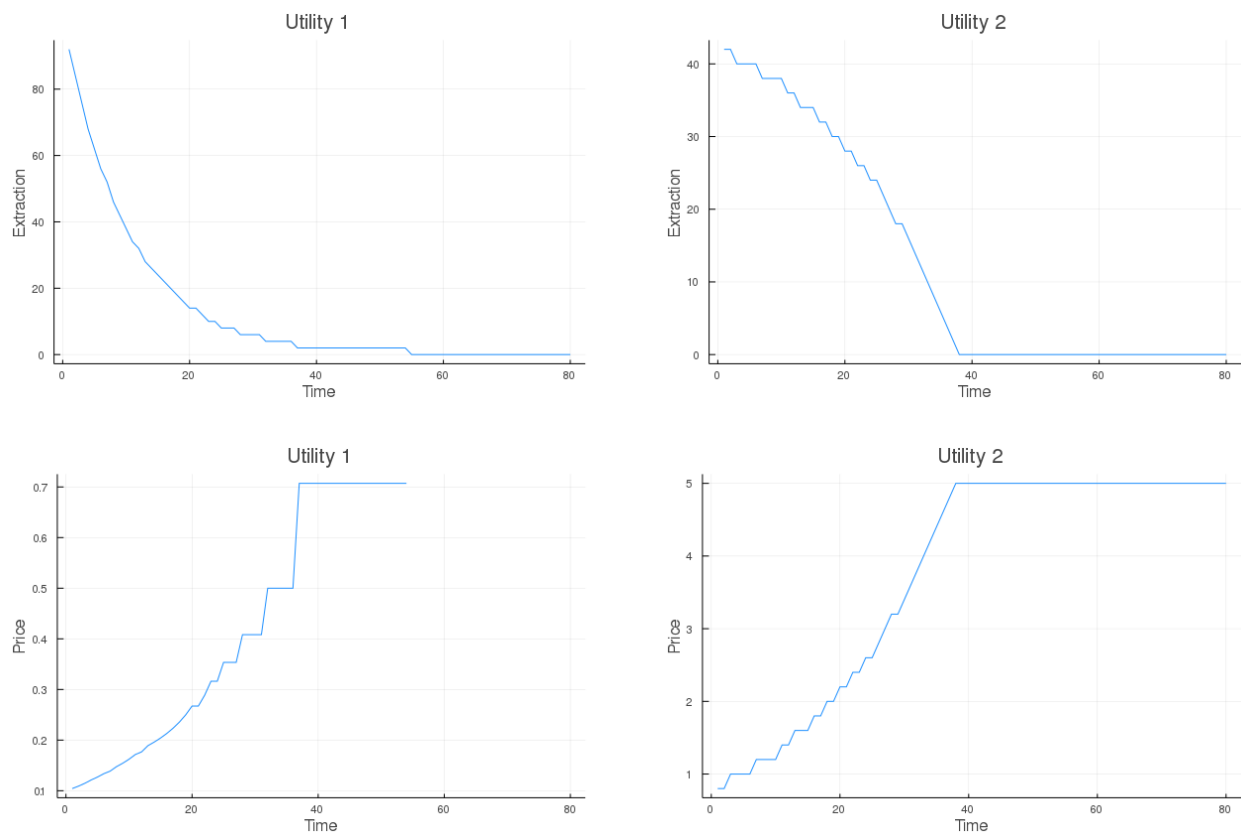


Figure 1: Extraction and corresponding price paths for both utility functions

## Problem 2

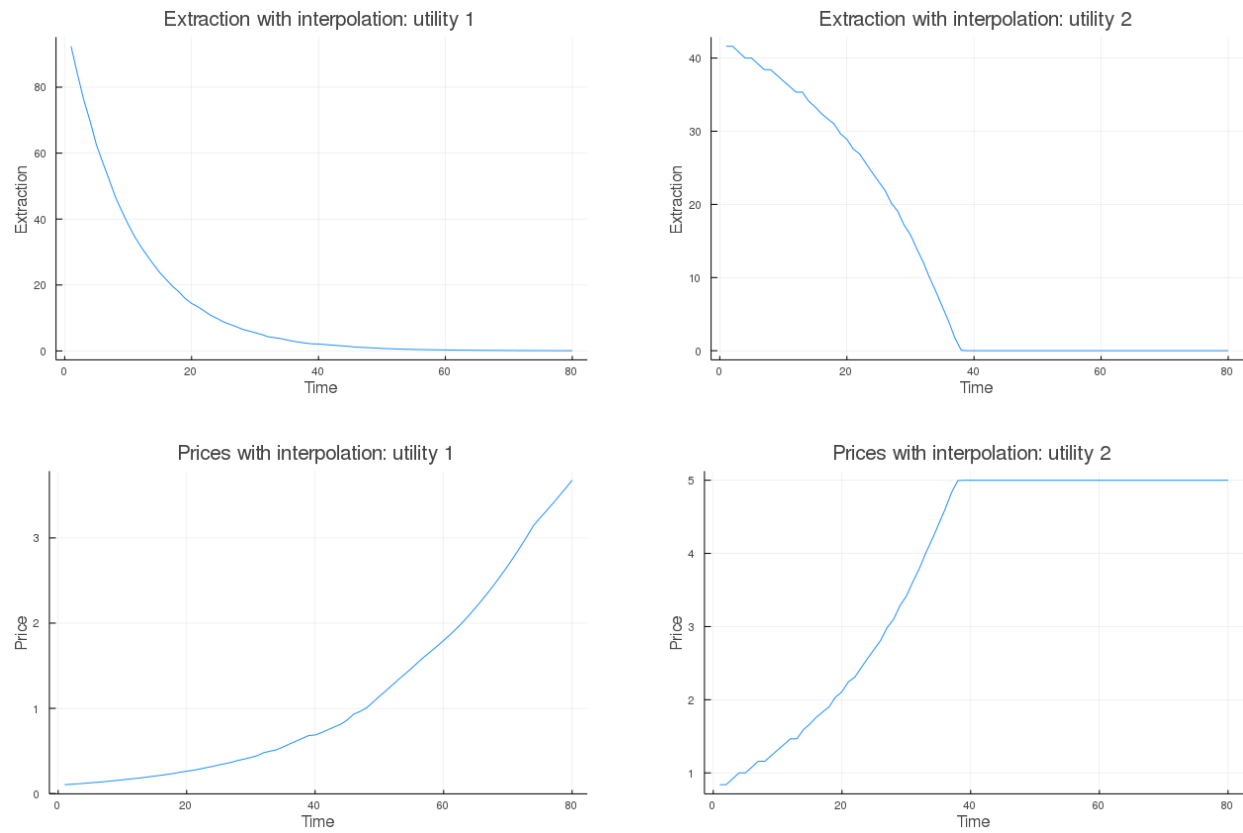


Figure 2: Extraction and corresponding price paths for both utility functions

### Problem 3

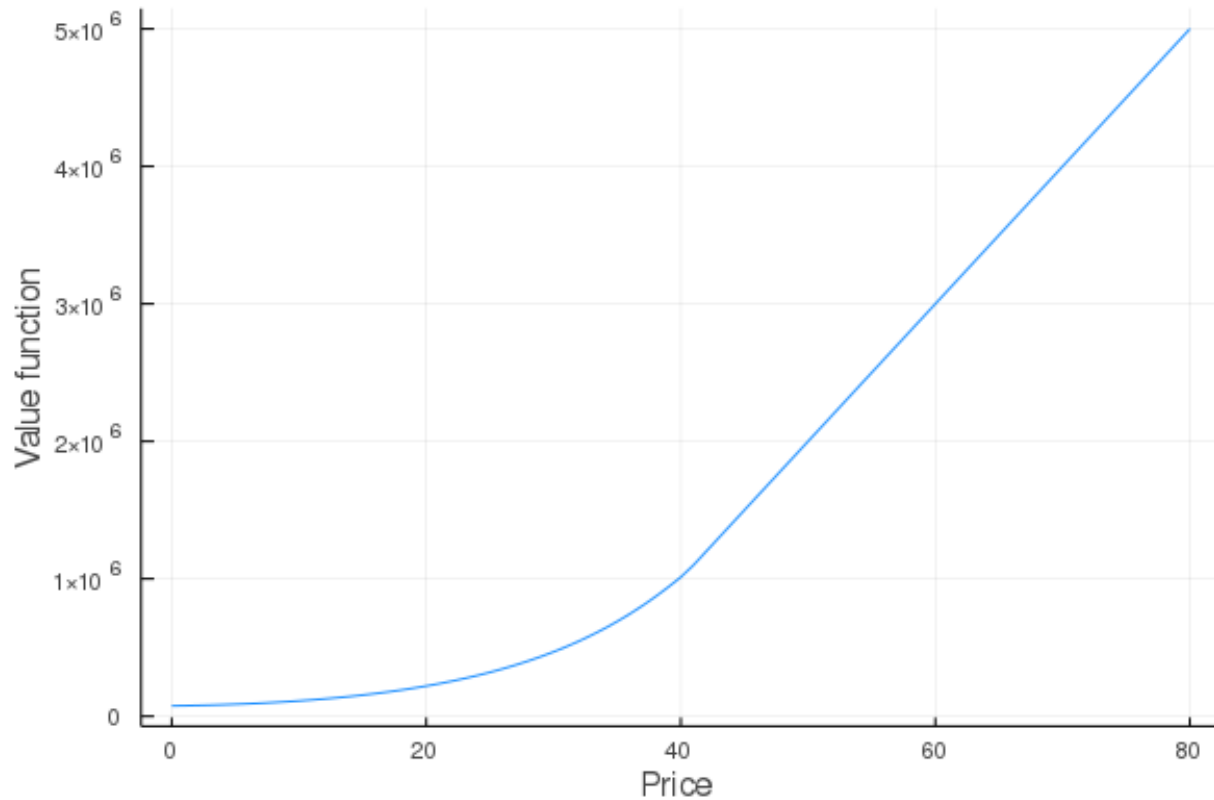


Figure 3: Value function at each corresponding price

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I find the trigger price is \$41 which is the price at which the profit from drilling becomes larger than the value of waiting.

Before hitting the trigger price, we have a non-linear relationship between the price and the value function because the value includes the option of waiting around and drilling in the future. This all depends on the standard deviation of the random price walk and how far in the future does it hit the trigger point.

The reason why this line is straight after the trigger price is because at any of those high prices, there is no longer any uncertainty. We know that anyone would drill immediately at those prices and the value is just the profit realized from drilling.