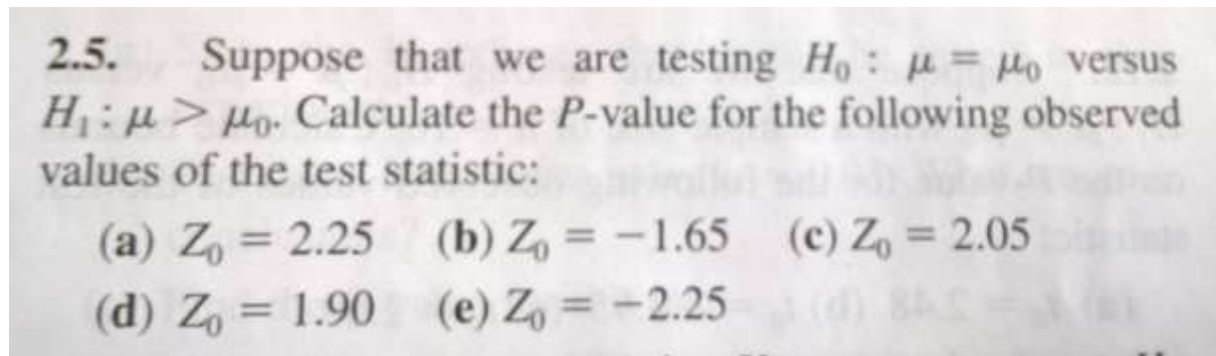


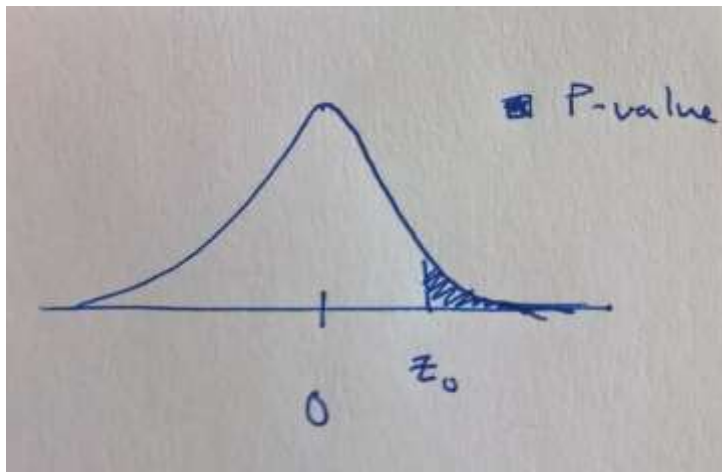
DAE_8 Problem 2.5

Given:



Solution:

The Z statistic is related to the standard normal distribution $N(\mu, \sigma) = N(0, 1)$. The test is one sided as only more extremely larger values are considered under H_1 (see figure below).



The P -value the probability of more extreme cases than Z_0 , $P(z > Z_0)$, i.e.

$$P = P(z > Z_0)$$

This probability in turn is derived from the CDF as

$$P(z > Z_0) = 1 - P(z \leq Z_0) = 1 - \text{CDF}(Z_0)$$

The CDF of the normal distribution is determined by the error function, which does not have an analytical solution for the 1-D case. Using MATLAB/OCTAVE the following code will determine the P -values.

```
Z0=[2.25, -1.65, 2.05, 1.90, -2.25]'; %Vector cases A-E
```

```
P=(1-normcdf(Z0,0,1))
```

```
P =
    0.0122
    0.9505
    0.0202
    0.0287
    0.9878
```