# MECH 6326 - HW1

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## Problem 3

```
% Setup
% Problem Data
B = 100;
mu0 = 0;
mu1 = 0.1;
sig0 = 0.4;
sig1 = 0.4;

% Sim Setup
N = 1E5;
p0 = lognrnd(mu0,sig0,1,N);
p1 = lognrnd(m1,sigma1,1,N);

% Case 1: Prescient
R1 = zeros(1,N);
R1(p0 > p1) = B*p0(p0 > p1);
R1(p1 > p0) = B*p1(p1 > p0);

hist(R1)


% Case 2: Distribution info
E0 = exp(mu0 + (sig0^2)/2);
E1 = exp(mu1 + (sig1^2)/2);

if E0 > E1
    R2 = B*p0;
elseif E0 < E1
    R2 = B*p1;
elseif E0 == E1
    R2 = B*(0.5*p0 + 0.5*p1);
end

hist(R2)

% Case 3: Partial Info
R3(p0 > E1) = B*p0(p0 > E1);
R3(p0 < E1) = B*p1(p0 < E1);
R3(p0 == E1) = B*(0.5*p0(p0 == E1)+0.5*p1(p0==E1));

hist(R3)
```