```
B = 2; %meters
H = 4; %meters
Area = .5 * (B.*H);
fprintf('The right-angled triangle has area = %.1f m^2.', Area)
```

```
The right-angled triangle has area = 4.0 m^2.
```

```
%through here it's just defining variables
density = 1.225;
radi = 220/2;
rotorA = pi*(radi^2);
windVeloc = 0:20;
PwindPower = 0.5 * density * rotorA * (windVeloc.^3)
```

```
PwindPower = 1×21
10^8 ×
         0    0.0002    0.0019    0.0063    0.0149    0.0291    0.0503    0.0799 ···
```

```
aeroEff = .397;
mechE = .96;
elecEff = .94;
Cp = aeroEff * mechE * elecEff;
Cp100 = Cp*100;
valAt13 = (0.5 * density * rotorA * (windVeloc(13)).^3);
%debug checker
fprintf("The power coefficient is %.2f percent", Cp100);
```

```
The power coefficient is 35.83 percent
```

```
Pout = Cp * PwindPower;
Pout13 = Cp * (0.5 * density * rotorA * (windVeloc(13)).^3);
%when I started realizing that I need a function that sees the 13th index

Cp2 = 0.593;
%probably should've named the value above CpMax or smth bc I did for
%everything else

PmaxOut = Cp2 * PwindPower;
PmaxOut13 = Cp2 * valAt13;
PercentDiff = ((PmaxOut - Pout)/Pout) * 100;
PercentDiffat13 = ((PmaxOut13 - Pout13)/Pout13) * 100;

fprintf("At a wind velocity of 12 m/s the results for the Haliade-X turbine are as
follows: \n")
```

```
At a wind velocity of 12 m/s the results for the Haliade-X turbine are as follows:
```

```
fprintf("The output power generated is %.2f watts", Pout13)
```

```
The output power generated is 14413673.08 watts
```

```
fprintf("The theoretical maximum output power that can be generated according to
Betz''s law is %.2f watts",PmaxOut13)
```

```
The theoretical maximum output power that can be generated according to Betz''s law is 23858314.96 watts
```

```
fprintf("The percentage difference between the output power generated and the
theoretical maximum output power is %.2f %%.", PercentDiffat13)
```

```
The percentage difference between the output power generated and the theoretical maximum output power is 65.53 %.
```