```
format long g
v = 0.5
for i = 100
        iter(i+1) = i;
        v(i+1) = sqrt((([500 + (log(v(i)))^3]^4 (34.3 + (0.02*v(i))))))
        ea(i+1) = abs((v(i+1) - v(i)) / v(i+1)) * 100;
        if ea(i+1) <= 1E-11
                break
        end
end
[iter' v' ea']
plot (v, iter)
axis tight
grid on
grid minor
```

Ans: 304.067832285085

Assignment 1

Given $f_D = \frac{0.3v^2}{500 + (\ln v)^3} - 0.02v$

At terminal velocity:

$f_D = mg$

$mg = \frac{0.3v^2}{500 + (\ln v)^3} - 0.02v$

$\frac{0.3v^2}{500 + (\ln v)^3} = mg + 0.02v$

$0.3v^2 = (500 + [\ln v]^3)(mg + 0.02v)$

$v^2 = \frac{(500 + [\ln v]^3)(mg + 0.02v)}{0.3}$

$v = \sqrt{\frac{(500 + [\ln v]^3)(mg + 0.02v)}{0.3}}$

where $m \rightarrow 3.5kg$

$g \rightarrow 9.8 m/s^2$

$v = \sqrt{\frac{(500 + [\ln v]^3)(3.5 \times 9.8 + 0.2v)}{0.3}}$

$v = \sqrt{\frac{(500 + [\ln v]^3)(34.3 + 0.2v)}{0.3}}$

Given $v_0 = 0.5$

MATLAB CODE

1. Command Window
2. Clear
3. CLC
4. Close all