

멀티미디어수치해석

과제 01

2017113547

이정근

소스코드1 : velocity.m

```
function v = velocity(m)
v = sqrt(9.81*m/0.25)*tanh(sqrt(9.81*0.25/m)*4)-36;
end
```

소스코드2 : msm.m

```
function [root,rootvec,et0, etvec, eavec]=msm(func,xr,es,pertfrac,maxit)
iter = 0;
et0 = abs((142.7376-xr)/142.7376);
rootvec = zeros(maxit);
etvec = zeros(maxit);
eavec = zeros(maxit);
while(1)
    xrold = xr;
    xr = xrold - pertfrac*xrold*func(xrold)/(func(xrold+pertfrac*xrold)-
func(xrold));
    iter = iter+1;
    rootvec(iter) = xr;
    etvec(iter) = abs((142.7376-xr)/142.7376)*100;
    if xr ~= 0
        ea = abs((xr-xrold)/xr)*100;
        eavec(iter) = ea;
    end
    if ea <= es || iter >= maxit, break, end
end
root = xr;
```

소스코드3 : main.m

```
[root, rootvec,et0, etvec, eavec] = msm(@velocity, 50, 0.0001, 0.000001,
10);

fprintf('root = %10.4f\n',root);
fprintf(' i      xi      |et|      |ea|\n');
fprintf('%3d%10.4f      %10.12f\n',0,50,et0);
for i=1:6

fprintf('%3d%10.4f      %10.12f      %10.7f\n',i,rootvec(i),etvec(i),eavec(i));
end
```

실행결과

명령 창

```
>> main
```

```
root = 142.7376
```

i	xi	letl	lea
0	50.0000	0.649706874713	
1	88.3993	38.068660345118	43.4384712
2	124.0897	13.064461937075	28.7617687
3	140.5417	1.538401345821	11.7061481
4	142.7072	0.021307314618	1.5174174
5	142.7376	0.000019113727	0.0213264
6	142.7376	0.000023195328	0.0000041