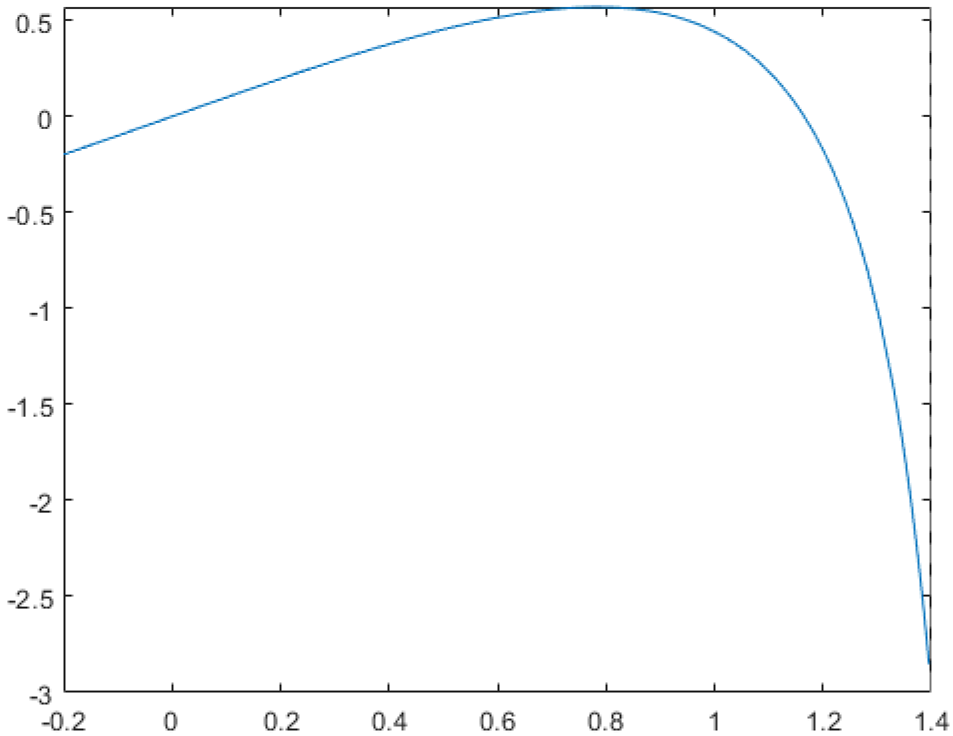
```
%4.3.2
%b there is one root in the intervval
f = @(x) 2.*x - tan(x);
dfdx = @(x) 2-(sec(x)).^2;
fplot(f, [-.2 1.4]);
%c
true_root = fzero(f, 1);
true_root
%d
results = newton(f, dfdx, 1);
root = results(end);
root
%e
xn = [1];
e = [xn(1) - true_root];
for k =1:4
   xn(end+1) = xn(end) - f(xn(end))/dfdx(xn(end));
   e(end+1) = xn(end) - true_root;
end
e
function x = newton(f, dfdx, x1)
funtol = 100*eps; xtol = 100*eps; maxiter=40;
x = x1;
y = f(x1);
dx = Inf;
k =1;
while(abs(dx) > xtol)&&(abs(y) > funtol)&&(k < maxiter)
    dydx = dfdx(x(k));
    dx = -y/dydx;
    x(k+1) = x(k) + dx;
    k = k+1;
    y=f(x(k));
end
end
```

```
true_root =

    1.1656


root =

    1.1656


e =

   -0.1656    0.1449    0.0584    0.0105    0.0004
```



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