

main.m

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Definitions

```
func = @(x) 2./(exp(x) - 1) - 2./sqrt(x) + 1;  
dfunc = @(x) 1./x.^(3/2) - 2*exp(x)./(exp(x) - 1).^2;
```

Part (a)

```
a = func([0.5, 1.7, 2.1, 4.5])
```

```
a =
```

```
1.2546    -0.0869    -0.1010     0.0797
```

Part (b)

```
b = dfunc([0.5, 1.7, 2.1, 4.5])
```

```
b =
```

```
-5.0070    -0.0958     0.0106     0.0820
```

Part (c)

```
subplot(2, 1, 1)  
xs = linspace(0, 100, 500);  
plot(xs, func(xs))
```

```
subplot(2, 1, 2)  
xs = linspace(1/2, 10, 500);  
plot(xs, func(xs))
```

main_01-eps-converted-to.pdf

Part (d)

```
tol = 1e-6;
for i=1:10
    str = sprintf('Init. val: %d', i);
    disp(str)
    disp(newton(func, dfunc, i, tol));
end
```

```
Init. val: 1
    1.2866
```

```
Init. val: 2
No convergence
Init. val: 3
    3.5764
```

```
Init. val: 4
    3.5764
```

Init. val: 5
3.5764

Init. val: 6
3.5764

Init. val: 7
3.5764

Init. val: 8
1.2866

Init. val: 9
No convergence
Init. val: 10
No convergence