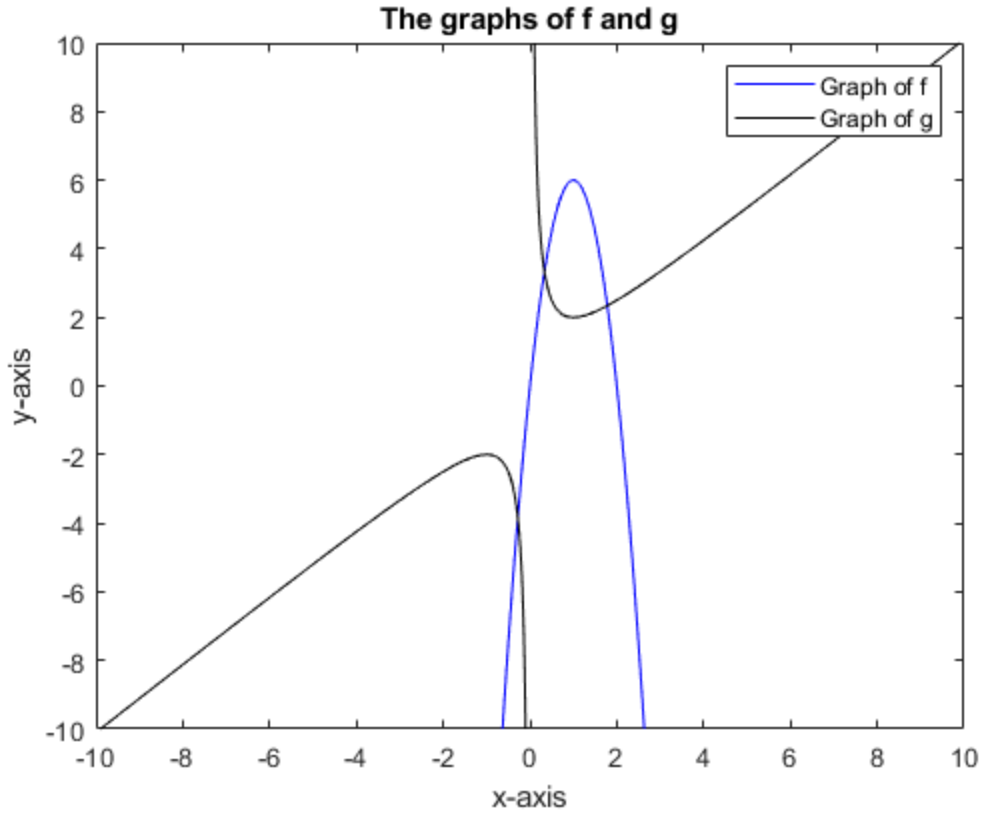
```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Type your name and student number on the next two lines.
% Name:Ingeborg Goddijn
% Student number: 1234567
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

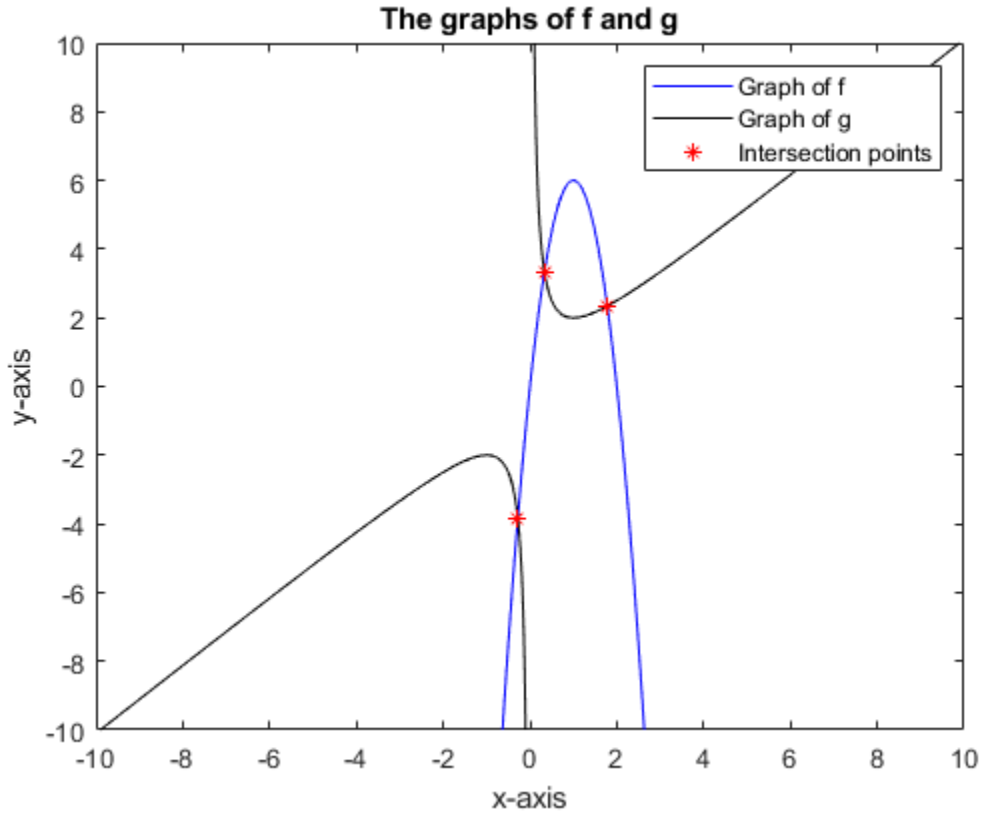
Exercise 1.

```
clc;clear;
%
% (b)
%
N = 1000;
a = -10;
b = 10;
x = linspace(a,b,N+1);
yf = funcf(x);
yg = funcg(x);
figure(1)
plot(x,yf,'b-');
hold on
plot(x,yg,'k-');
hold off
xlim([-10,10]);
ylim([-10,10]);
legend("Graph of f","Graph of g");
xlabel("x-axis");
ylabel("y-axis");
title("The graphs of f and g")
%
% (d)
%
fun = @funcdiff;

x0 =  -1.0;
x1 = fzero(fun,x0);
y1 = funcf(x1);
disp([x1,y1])

x0 =  0.3;
x2 = fzero(fun,x0);
y2 = funcf(x2);
disp([x2,y2])

x0 =  2.0;
x3 = fzero(fun,x0);
y3 = funcf(x3);
disp([x3,y3])

%
% (e)
%
```

```
figure(2)
plot(x,yf,'b-');
hold on
plot(x,yg,'k-');
plot(x1,y1,'*r')
plot(x2,y2,'*r')
plot(x3,y3,'*r')
hold off
xlim([-10,10]);
ylim([-10,10]);
legend("Graph of f","Graph of g","Intersection points");
xlabel("x-axis");
ylabel("y-axis");
title("The graphs of f and g")

%
% (g)
%
N = 1000;
tr = trap_for(fun,x2,x3,N);
disp(['First approximation ',num2str(tr)])

N = 1000;
tr = trap(fun,x2,x3,N);
disp(['Second approximation ',num2str(tr)])
```

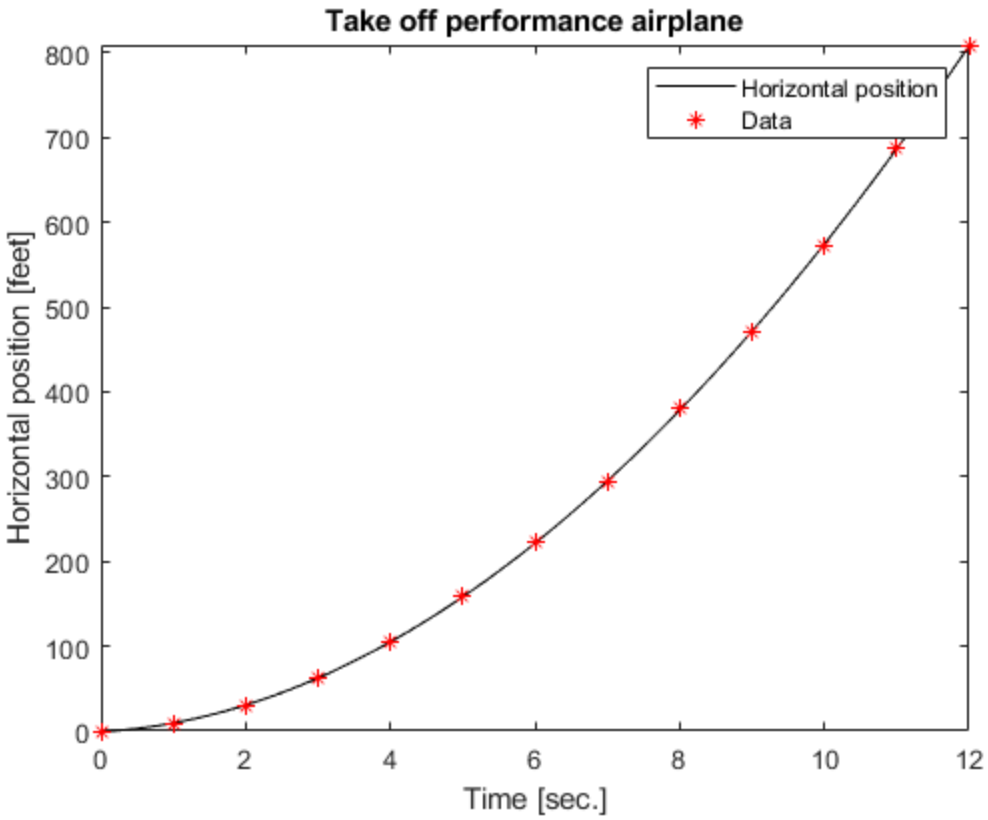
```
   -0.2808   -3.8423

    0.3333    3.3333

    1.7808    2.3423

First approximation 3.9344
Second approximation 3.9344
```


The graphs of f and g
Graph of f
Graph of g
y-axis
x-axis
10
8
6
4
2
0
-2
-4
-6
-8
-10
-10
-8
-6
-4
-2
0
2
4
6
8
10


The graphs of f and g
Graph of f
Graph of g
Intersection points
y-axis
x-axis
10
8
6
4
2
0
-2
-4
-6
-8
-10
-10
-8
-6
-4
-2
0
2
4
6
8
10

Exercise 2.

```
clc;clear;
%
% (a)
%
t = linspace(0,12,13);
p =
 [0,8.8,29.9,62.0,104.7,159.1,222.0,294.5,380.4,471.1,571.7,686.8,809.2]' ;
A = [t.^0;t;t.^2;t.^3]' ;
%
% (b)
%
beta = A\p;
%
% (c)
%
N = 100;
T = linspace(0,13,N+1);
P = beta(1)*T.^0+beta(2)*T+beta(3)*T.^2+beta(4)*T.^3;
figure(3)
plot(T,P,'k');
hold on
plot(t,p,'*r');
hold off
xlim([0,12]);
ylim([p(1),p(13)]);
xlabel('Time [sec.]');
ylabel('Horizontal position [feet]')
title('Take off performance airplane')
legend('Horizontal position','Data')
```



Published with MATLAB® R2018a

```
function y = funcdiff(x)
y = funcf(x)-funcg(x);
end
```

```
Not enough input arguments.

Error in funcdiff (line 2)
y = funcf(x)-funcg(x);
```

Published with MATLAB® R2018a

```
function y = funcf(x)
y = -6*x.^2+12*x;
end
```

```
Not enough input arguments.

Error in funcf (line 2)
y = -6*x.^2+12*x;
```

Published with MATLAB® R2018a

```
function y = funcg(x)
y = (x.^2+1)./x;
end
```

```
Not enough input arguments.

Error in funcg (line 2)
y = (x.^2+1)./x;
```

Published with MATLAB® R2018a

```
function tr = trap(fun,a,b,N)

x = linspace(a,b,N+1);
h = (b-a)/N;
y = fun(x);
z = linspace(1,1,N+1);
tr = h*(y*z'-(fun(a)+fun(b))/2);
```

```
Not enough input arguments.

Error in trap (line 3)
x = linspace(a,b,N+1);
```

Published with MATLAB® R2018a

```
function tr = trap_for(fun,a,b,N)

x = linspace(a,b,N+1);
h = (b-a)/N;
y = fun(x);
s = 0;
for k = 1:N+1
    s = s + y(k);
end
s = s -(y(1)+y(N+1))/2;
tr = h*s;
```

```
Not enough input arguments.

Error in trap_for (line 3)
x = linspace(a,b,N+1);
```

Published with MATLAB® R2018a