```
%% %7.1
pretty(6, '$') %Type it in the command window 得 $$$$$$

% Function file pretty.m
function pretty(n, ch)
line = char(double(ch)*ones(1,n));%char 將 ASCII 碼轉回字串形式
disp(line)

%% %7.2

newquot(1) %Type it in the command window

% Function file f.m
function y=f(x)
y=x^3;

% Function file newquot.m
function newquot(x)
h = 1;
for i = 1 : 10
      df = (f(x + h) - f(x)) / h;
      disp( [h, df] );
      h = h / 10;
end

%Type the following three statements in the command window
fn = @f;
x = 2;
newquot_handel(fn,x)

%Using function handels to pass the function as the input parameter.
% another example
fn = @sin; % sine function
x=0.3;
newquot_handel(fn,x) % derivative of sin(0.3) = cos(0.3) = 0.9553

% Function file newquot_handel.m
function newquot_handel(fn,x)
```

```
h = 1;
for i = 1 : 10
    df = (feval(fn, x + h) - feval(fn, x)) / h;
    disp( [h, df] );
    h = h / 10;
end
```

```
%% %7.3
y = double(3)% Type it in the command window 得  y=6

% Function file double.m
function y = double(x)
y = x * 2;
```

```
%% %7.4
[xout, yout] = swop(4, 5);% Type it in the command window, [xout, yout]=[5 4]

% Function file swop.m
function [xout, yout] = swop(x, y)
xout = y;
yout = x;
```

```
%% %7.5
ex=exponential(2)
%Type it in the command window, 得    ex=6.3891
exp(2) % Matlab built-in function

% Function file exponential.m
function ex=exponential(x)
y=1; i=1; z=1;
while z>=10^-6
    z=x^i/factorial(i);%factorial 階乘
    i=i+1;
    y=y+z;
```

```
end
ex=y;

%% %7.6
% Script file
for i = 0 : 0.1 : 4
    disp( [i, phi(i)] );
end

% Function file phi.m
function y = phi(x)
a = 0.4361836;
b = -0.1201676;
c = 0.937298;
r = exp(-0.5 * x ^2) / sqrt(2 * pi);
t = 1 / (1 + 0.3326 * x);
y = 0.5 - r * (a * t + b * t ^2+ c * t ^ 3);

%% %7.7
[x1, x2, flag] = quad( 0.5, -1, 2)% 得[x1, x2, flag]=[0.5000    -1.0000    2.0000]
% Function file quad.m

function [x1, x2, flag] = quad( a, b, c )

if a==0 & b==0 & c==0
    flag = 99; x1=0; x2 = 0;
elseif a==0 & b==0
    flag = 0; x1=NaN; x2 = NaN;
elseif a==0
    flag = 1;
    x1 = -c/b;
    x2 = NaN;
else
    x1 = (-b + sqrt(b^2 - 4*a*c))/(2*a);
    x2 = (-b  - sqrt(b^2 - 4*a*c))/(2*a);
    flag = 2;
end
```

```
%% %7.8
% Type the following four statements in the command windpow
y = zeros(1,12);
for k = 1:12
y(k)=f(k);
end
display(y);

% Function file f.m
% Function file f.m
function y = f(n)
if n > 2
        y = f(n - 1) + f(n - 2);
else
        y = 1;
end
```