MATH 155 HWK 7

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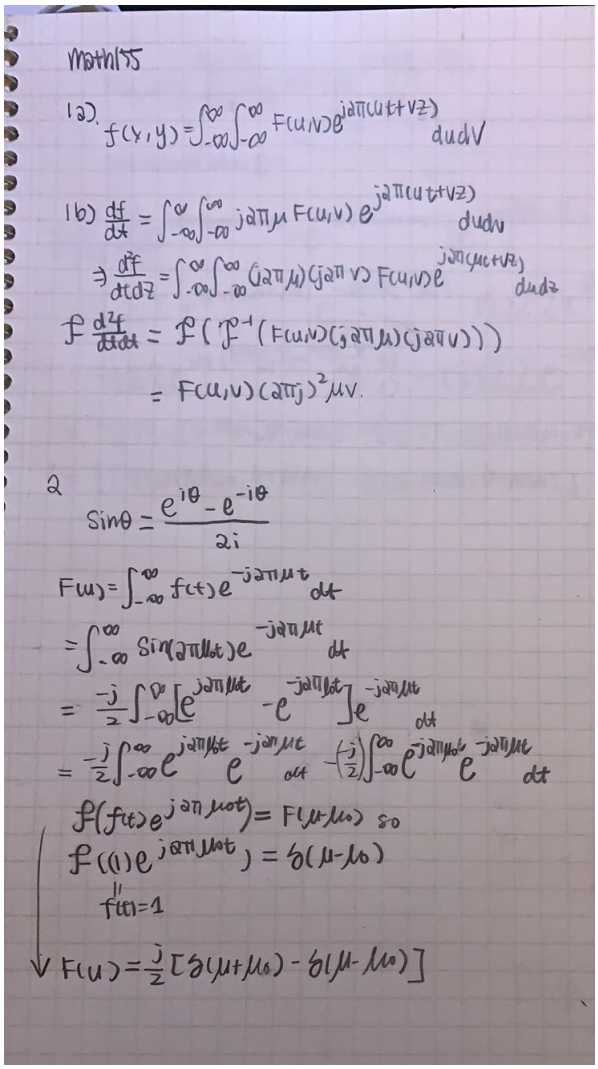
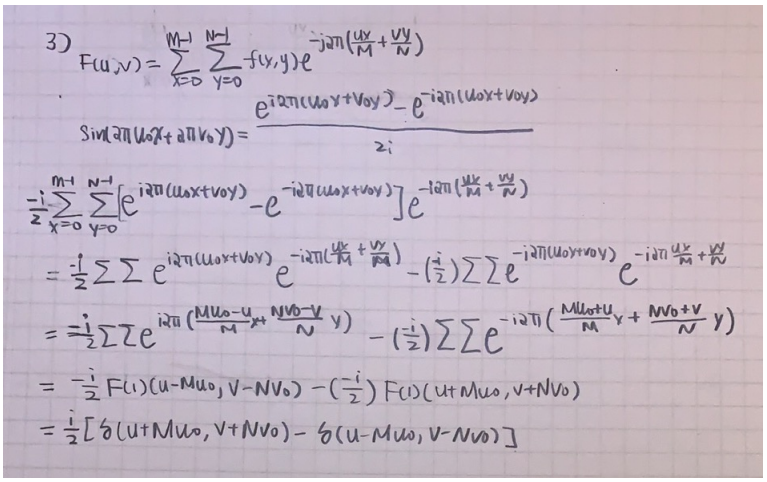
Question 1 an 2



Question 3



Question 4

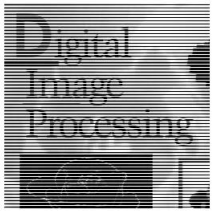
0.1 4a

The program is provided as

```
function [output] = sinnoise(input,A,u0,v0)
    [M,N] = size(input);
    noise=zeros(M,N);
    for i= 1:M
        for j= 1:N
            noise(i,j)=A*sin((2*pi*u0*i)+(2*pi*v0*j));
        end
    end
    output=zeros(M,N);

    for j = 1:M
        for l=1:N
            output(j,l)=noise(j,l)+input(j,l);
        end
    end
end
```

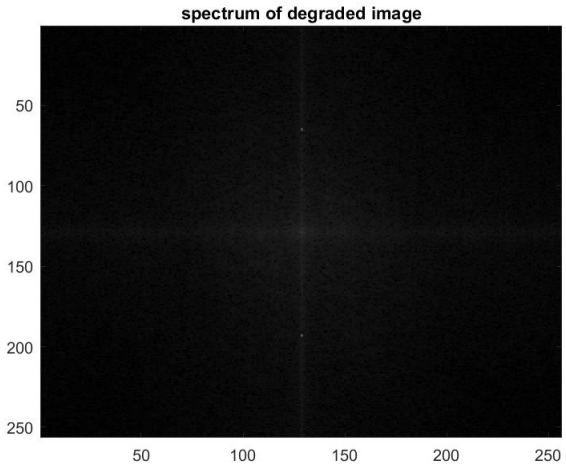
4b

```
A=imread('Fig5.26a.jpg');
input=im2double(A);
[M,N]=size(A);
output=sinnoise(input,200,0.25,0);
```



4c

```
for i = 1:M
   for j = 1:N
         d=(i-1)+(j-1);
         D(i,j)=output(i,j)*(-1)^d;
   end
end

fourier_trans=fft2(D);

Q=abs(fourier_trans);

c=5;
for i = 1:M
    for j = 1:N

       E(i,j)=c*log(1+Q(i,j));
    end
end

figure
image(E); colormap(gray); title('spectrum of degraded image');
```


spectrum of degraded image
50
100
150
200
250
50
100
150
200
250