4.18

Show that the 1-D convolution theorem also holds for discrete variables:

4.20

Use the sifting property of the 2-D impulse to show that convolution of a 2-D continuous function, , with an impulse shifts the function so that its origin is located at the location of the impulse.

The sifting property:

Show:

Proof

Using the sifting property, with the origin located at we get that

Therefore,