a) Given that:

*(Reader sketches the signal by yourself)*

b)

a) Given that:

1. Check for linearity:

Let:

From and , , the system is nonlinear.

2. Check for time invariant:

Let:

(delay the ouput).

Let:

Since, , therefore, the system is time invariant.

b) Given that:

1. Check for linearity:

Let:

From and , , the system is nonlinear.

2. Check for time invariant:

Let:

(delay the ouput).

Let:

Since, , therefore, the system is time variant.

Given that:

a)

Compare and , we obtain:

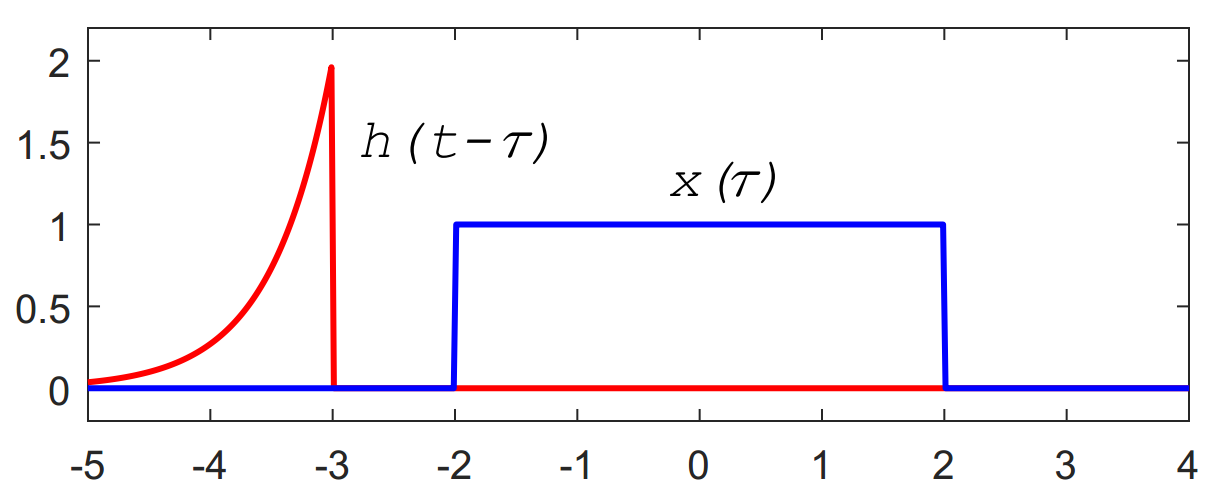
b) Given that:

Therefore,

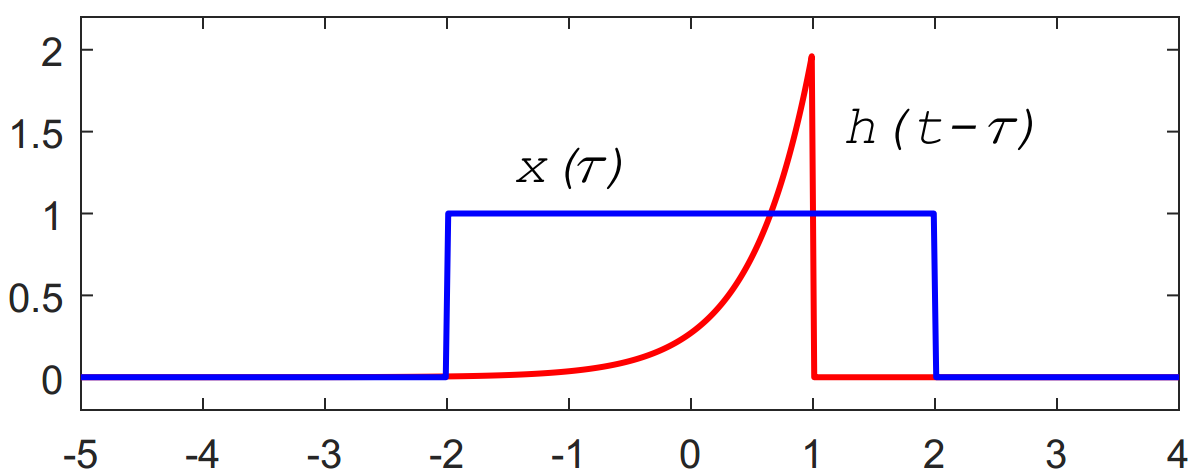
Given that:

a)

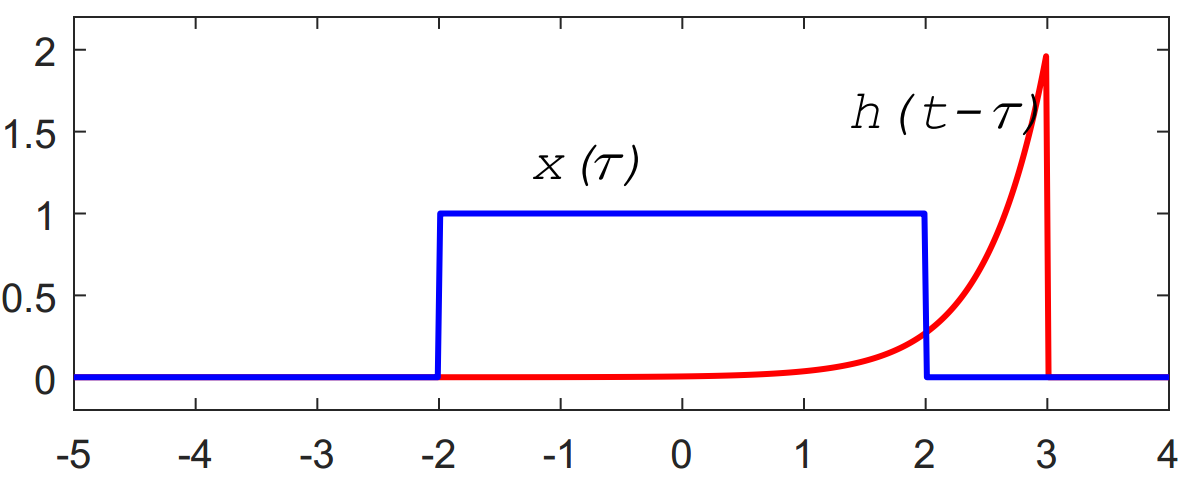
For :



For :



For :



b)

For , and does not overlap, therefore .

For :

For :

Thus,