a)

Given that:

We have:

*(Reader sketches the signal by yourself)*

b)

Given that:

a) Given that:

1. Check for linearity:

Let:

From and , , the system is linear.

2. Check for time invariant:

Let:

(delay the ouput).

Let:

Since, , therefore, the system is time variant.

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 invariant.

a) Given that:

We have:

Therefore,

Let:

(delay the ouput).

Let:

Since, , therefore, the system is time variant.

b) Given that:

c) Given that:

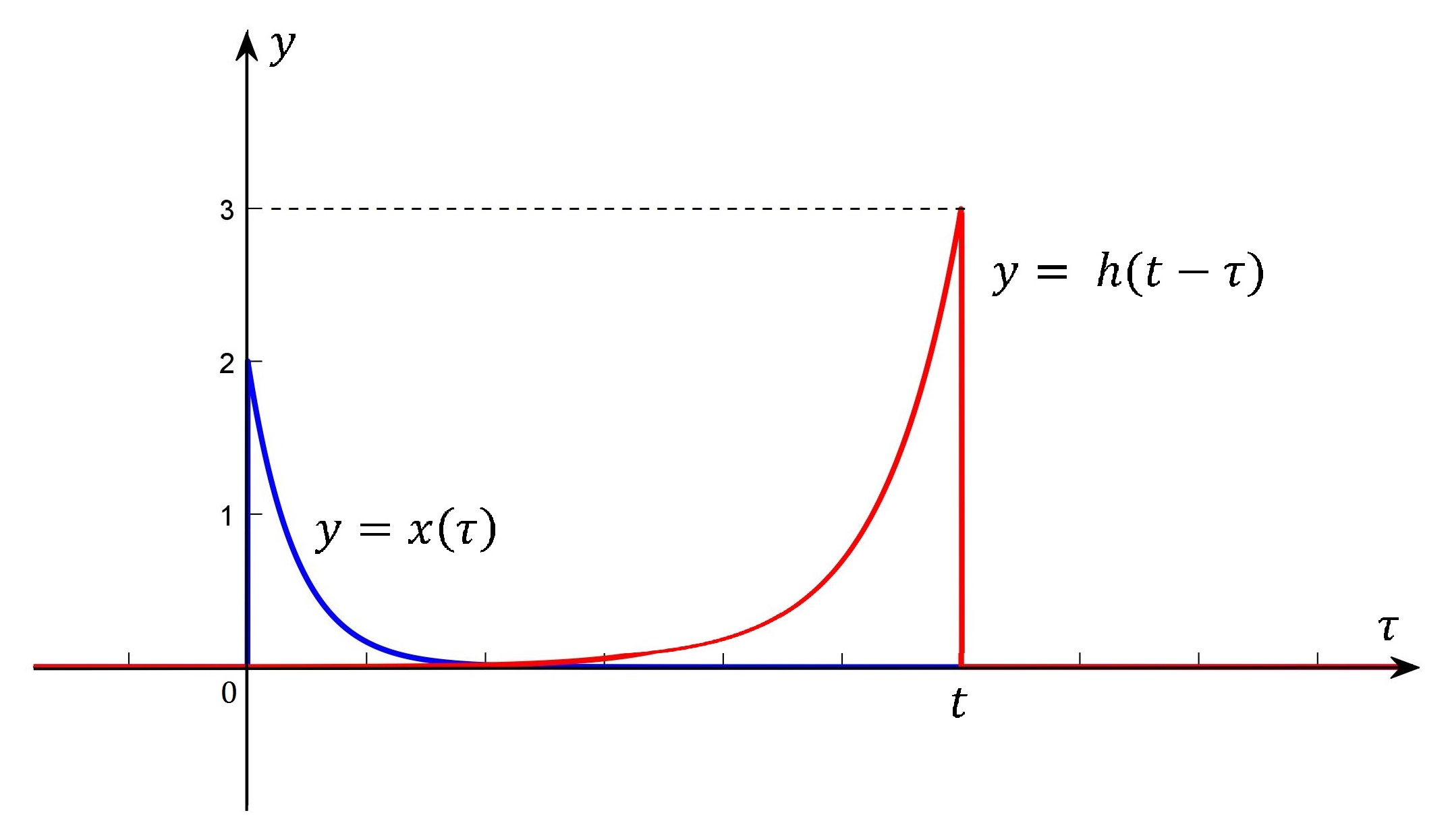
Therefore,

Given that:

a)

For input

We first sketch the graph of and , for any value of .



For and does not overlap, that leads to .

For the output becomes:

Thus,

b)

For

We have:

Due to the properties of LTI system, the output is given by: