EECE 290, Problem solving

Session 8

Announcement: PSpice quiz will be on April 23rd, 6 PM-8 PM in SRB

$u(t)*u(t) = ?$

A. -1
B. 0
C. 1
D. t
E. t^2
F. $\frac{1}{2} t^2$

$u(t) * t\,u(t) = ?$

A. -1
B. 0
C. 1
D. t
E. t^2
F. $\frac{1}{2} t^2$

A.

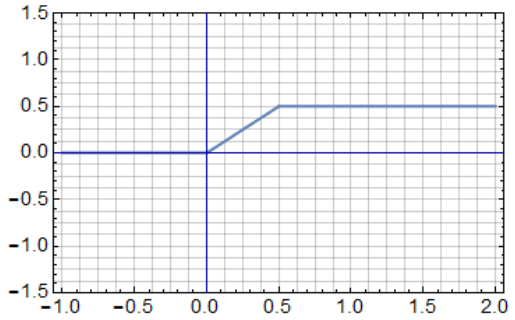
B.

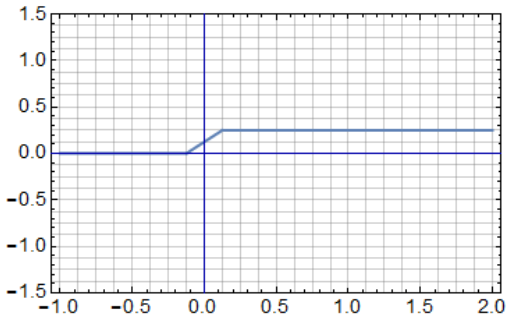
C.

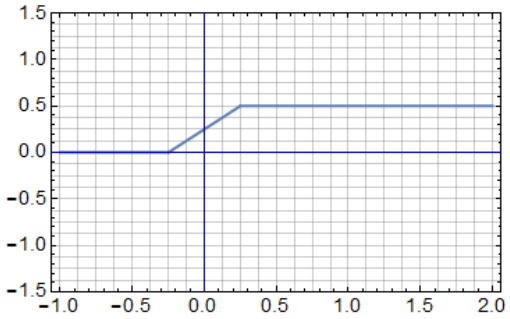
D.

E.

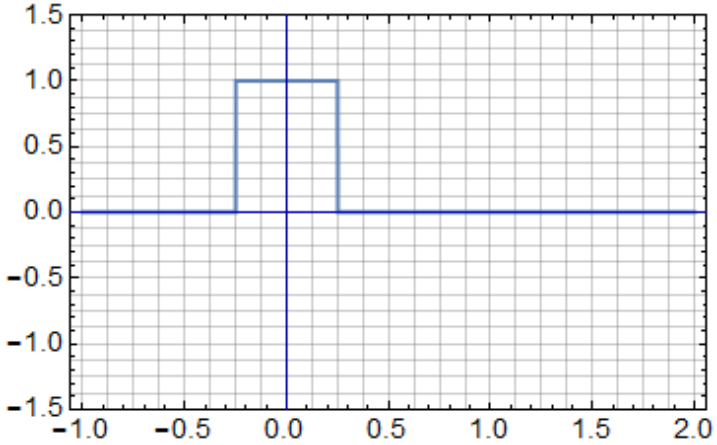
F.

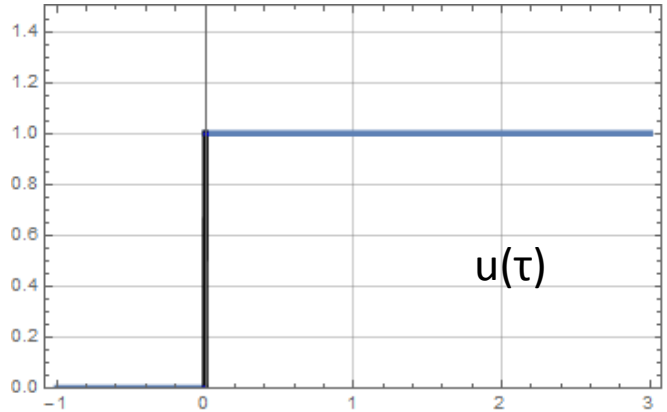

1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−1.0 −0.5 0.0 0.5 1.0 1.5 2.0

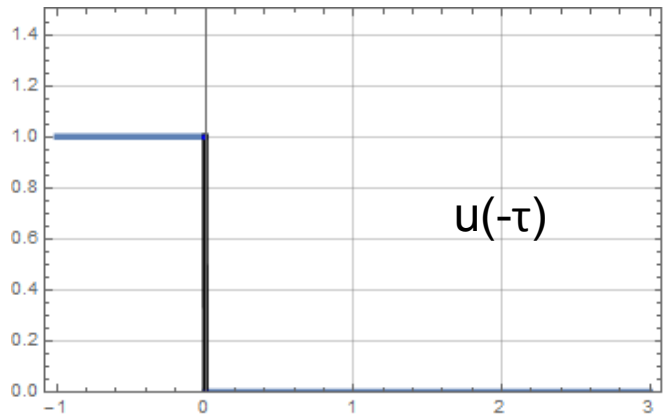

1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−1.0 −0.5 0.0 0.5 1.0 1.5 2.0

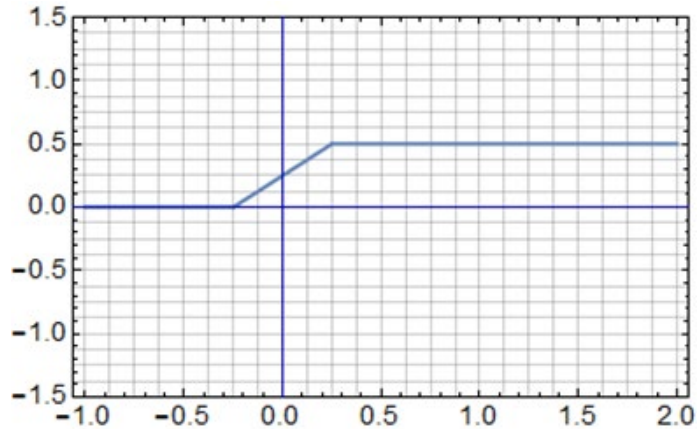

1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−1.0 −0.5 0.0 0.5 1.0 1.5 2.0

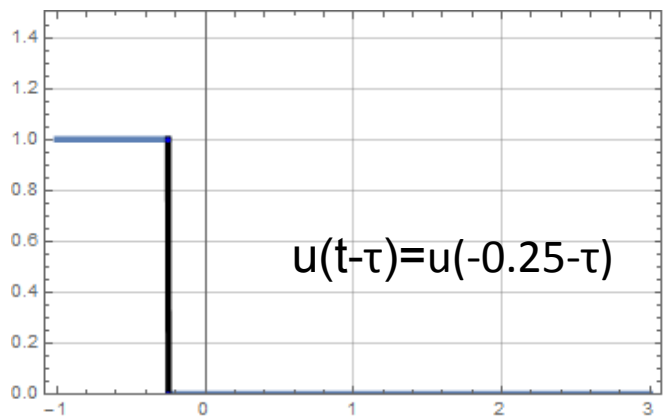
u(t)*

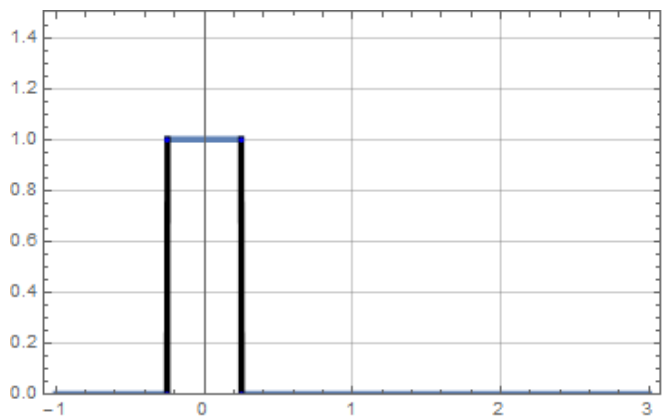

1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−1.0 −0.5 0.0 0.5 1.0 1.5 2.0

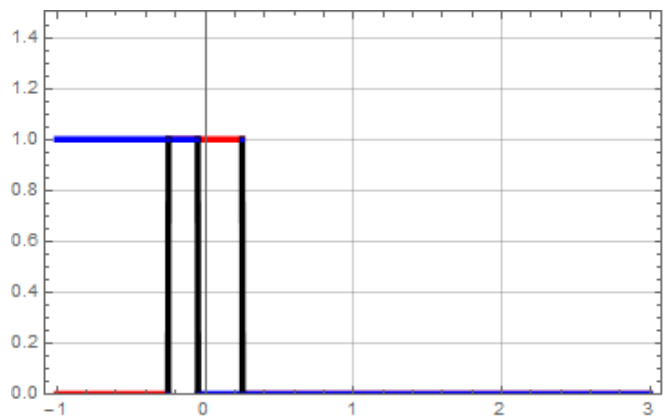

u(τ)


u(-τ)




u(t-τ)=u(-0.25-τ)

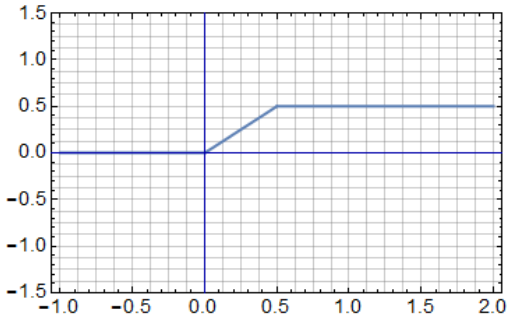


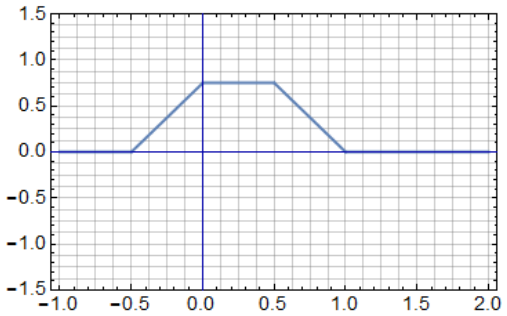


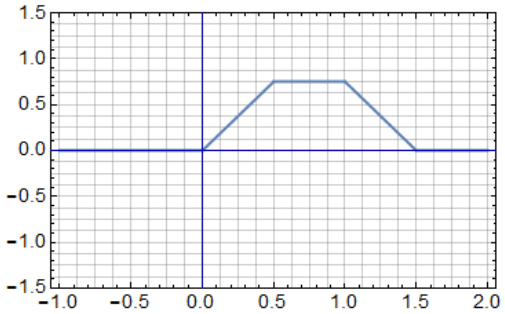
A.

B.

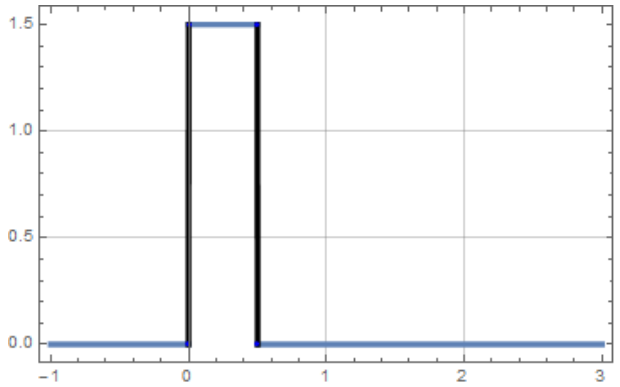
C.

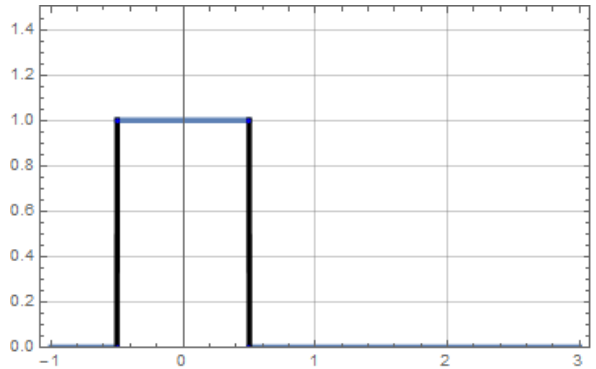




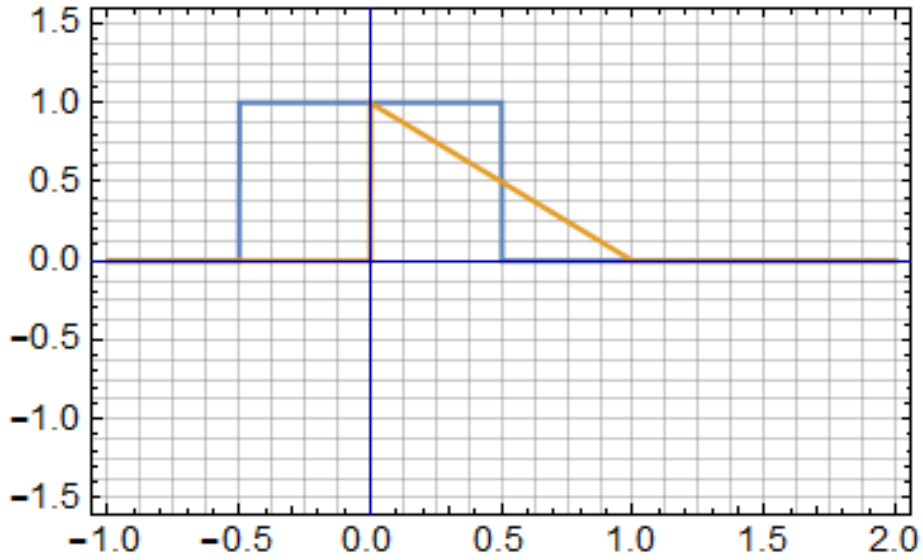


Convolve



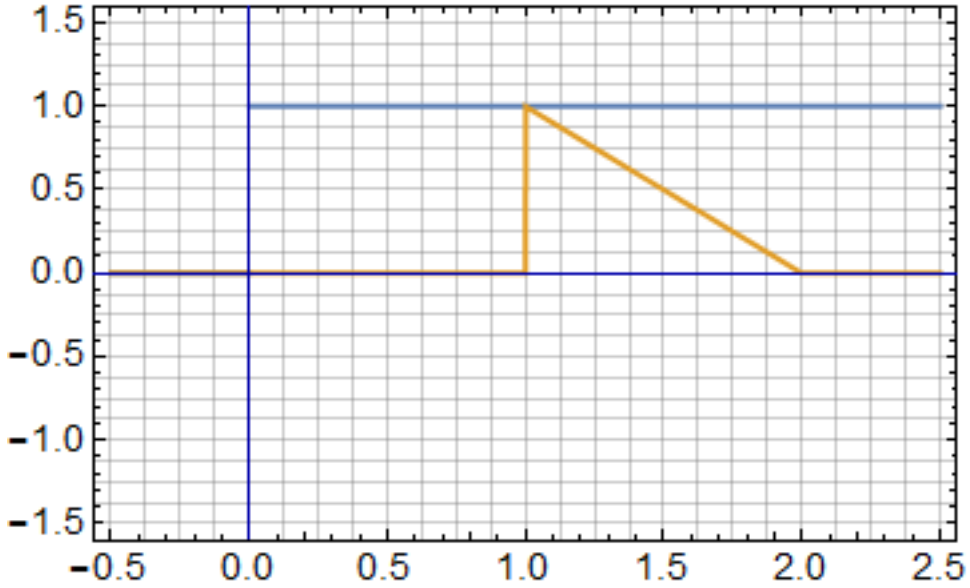


What is the extent in the time domain of the convolution?



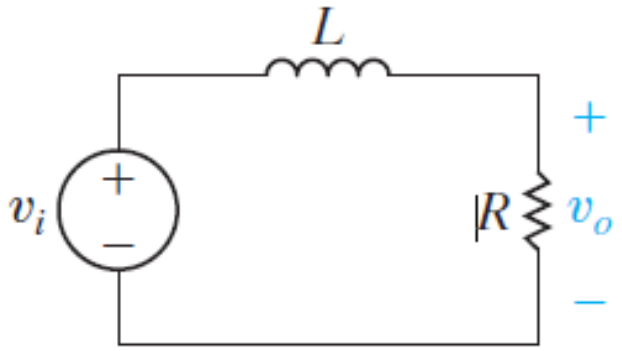
A. 0.5
B. 1
C. 1.5
D. 2
E. 2.5
F. 3

f(t) is the convolution of the functions shown. What is the value of f(3)?



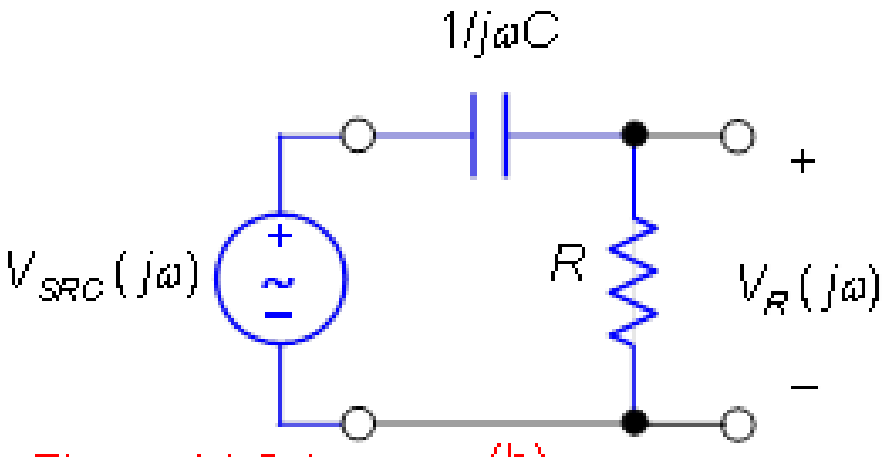
A. 0.5
B. 1
C. 1.5
D. 2
E. 2.5
F. 3

The response of this circuit is



A. Lowpass
B. Highpass
C. Bandpass
D. Bandstop

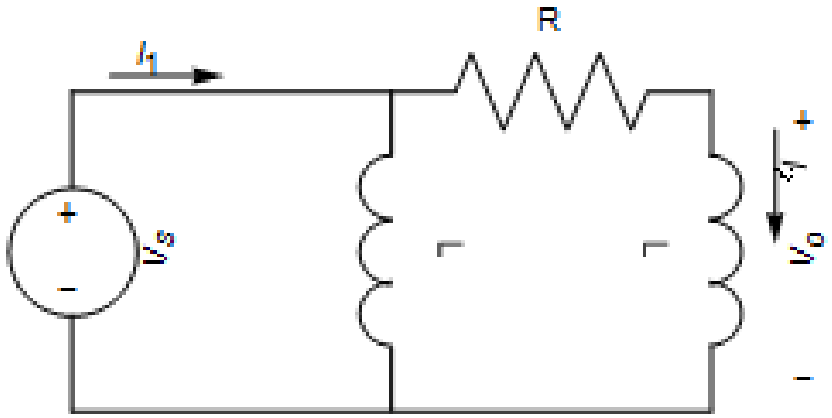
$$H_R(j\omega) = \frac{V_R(j\omega)}{V_{SRC}(j\omega)}$$



R= 1 kΩ, C=2 mF . The half power angular cut-off frequency ω_c is

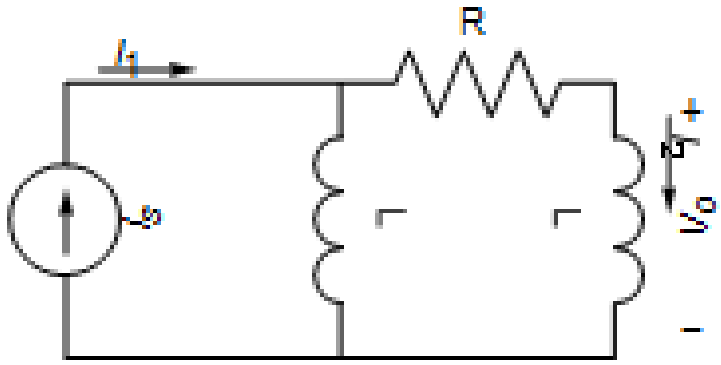
A. 2 rad/s
B. 1 rad/s
C. 0.5 rad/s
D. 20 rad/s
E. 5 rad/s

$H(j\omega)=V_o/V_s$, R = 1 kΩ, L = 0.5 mH. The half power angular cut-off frequency ω_c is



A. 1000 rad/s
B. 1 Mrad/s
C. 0.5 mrad/s
D. 2 Mrad/s
E. 5 krad/s

$H(j\omega)=I_2/I_s$, R= 1 kΩ, L=0.5 mH. The half power angular cut-off frequency ω_c is



A. 1000 rad/s
B. 1 Mrad/s
C. 0.5 mrad/s
D. 2 Mrad/s
E. 5 krad/s