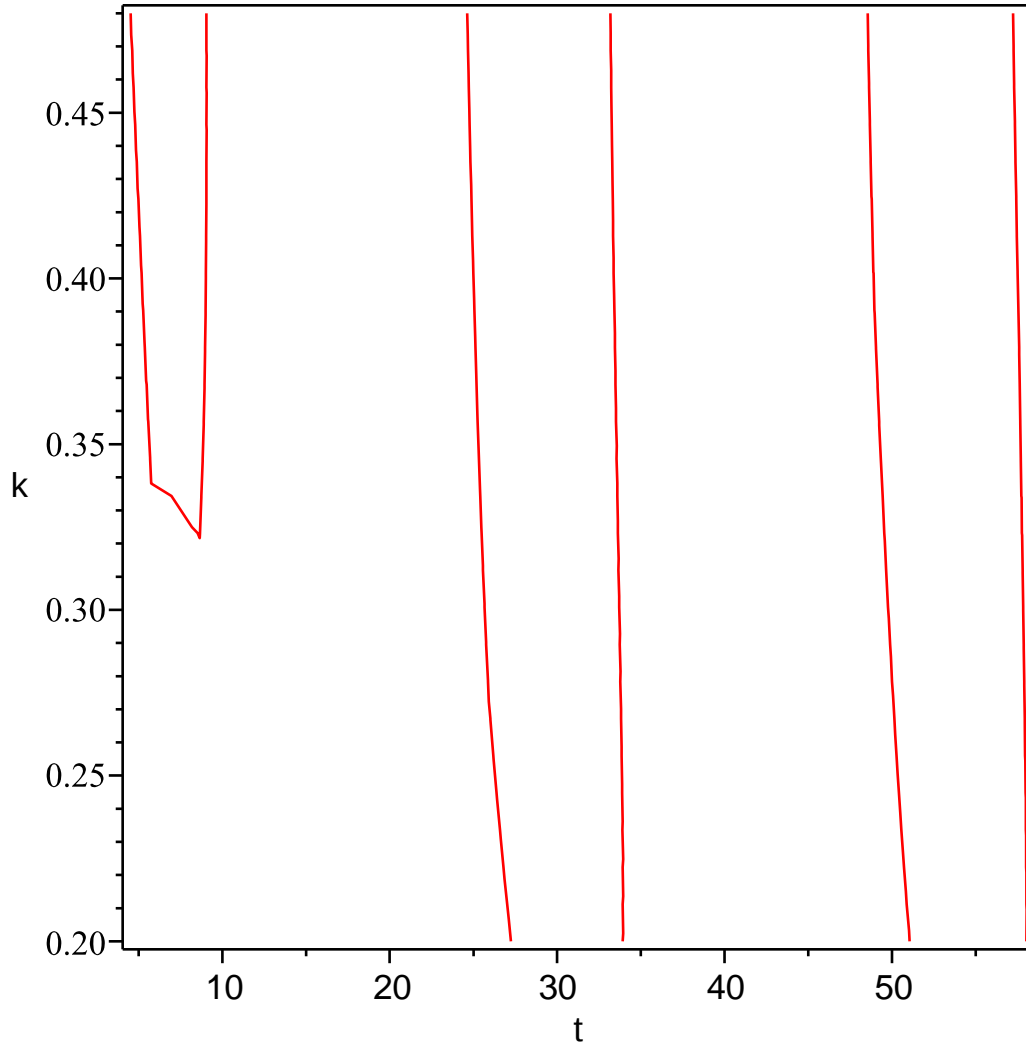


```

> with(plots): unassign('t','u0','k','omega'):
  uss:=35-(14*k/(k^2+omega^2))*(k*cos(omega*(t-3))+omega*sin
(omega*(t-3))):
  uss0:=subs(t=0,uss):
  U:=unapply((u0-uss0)*exp(-k*t)+uss,(t,u0,k,omega)):
  implicitplot(U(t,76,k,Pi/12)=30,t=0..72,k=0.2..0.48,axes=boxed);

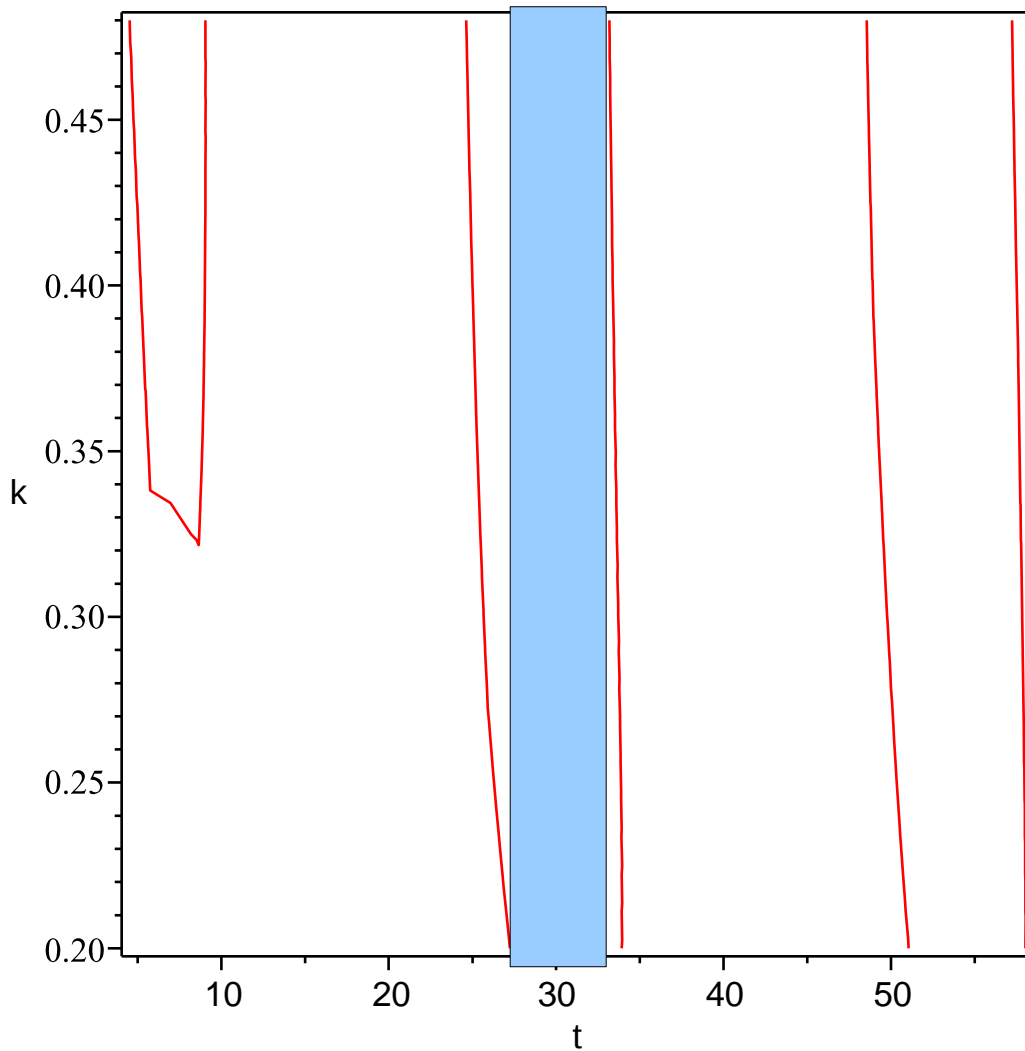
```



```

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```



The blue rectangle replaces the region R between the two red curves. Inequalities describe the rectangle: $27 < t < 33$, $0.2 < k < 0.5$. Meaning: for 27 to 33 hours, the temp surface is below the plane $z=30F$, hence freezing occurs, for all insulation constants k from 0.2 to 0.5.