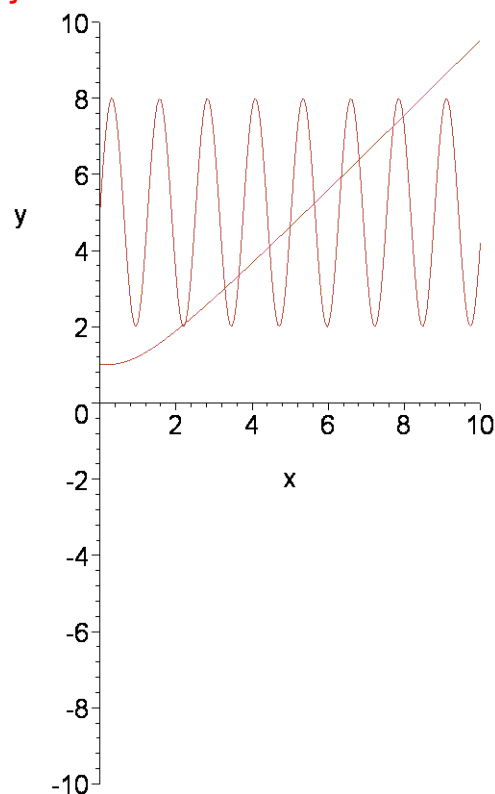# Priklady spojitosti slozenych funkci

funkce $f(x) := 3\sin(5x) + 5$ a funkce $g(y) := x + 1$; slozena funkce g(f(x))

graf funkci f a g

```
> with(plots):
> AC:=plot(3*sin(5*x)+5,x=0..10,y=-10..10,color=brown,ada
  ptive=false,numpoints=200):
> AB:=plot(x+1-arctan(x),x=0..10,y=-10..10,color=brown,ad
  aptive=false):
> display({AB,AC});
```


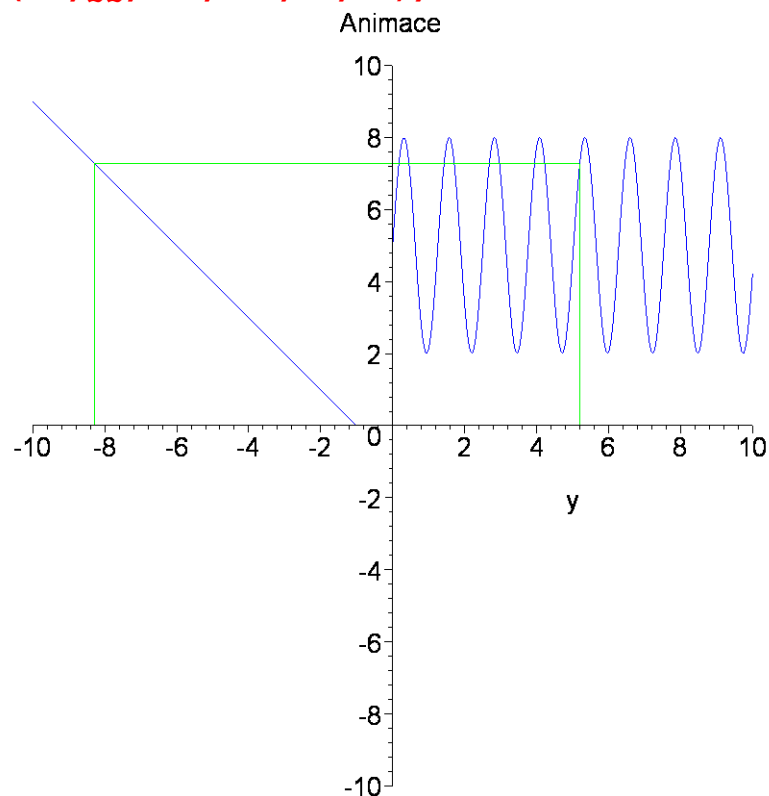### *animace1*

```
> with(plots):
> U:=plot(0,x=-10..10,y=10..10,adaptive=false,title='Anim
  ace',axes=normal):
> WJ:=seq(plot([5+sin(i/5),x,x=0..3*sin(5*(5+sin(i/5)))+5
  ],y=-10..10,adaptive=false,color=green),i=1..100):
> WI:=plot(3*sin(5*x)+5,x=0..10,y=-10..10,adaptive=false,
  color=blue,numpoints=200):
> P:=seq(plot(3*sin(5*(5+sin(i/5)))+5,x=-(3*sin(5*(5+sin(
  i/5)))+6)..5+sin(i/5),y=-10..10,adaptive=false,color=gr
  een),i=1..100):
```

```
> R:=seq(plot([-(3*sin(5*(5+sin(i/5)))+6),x,x=0..3*sin(5*
  (5+sin(i/5)))+5],y=-10..10,adaptive=false,color=green),
  i=1..100):
> Q:=plot(-x-1,x=-10..-1,y=-10..10,adaptive=false,color=b
  lue):
> WJJ:=display(WJ,insequence=true):
> UU:=display(U,insequence=false):
> QQ:=display(Q,insequence=false):
> RR:=display(R,insequence=true):
> PP:=display(P,insequence=true):
> WII:=display(WI,insequence=false):
> display(UU,QQ,WJJ,WII,PP,RR);
```
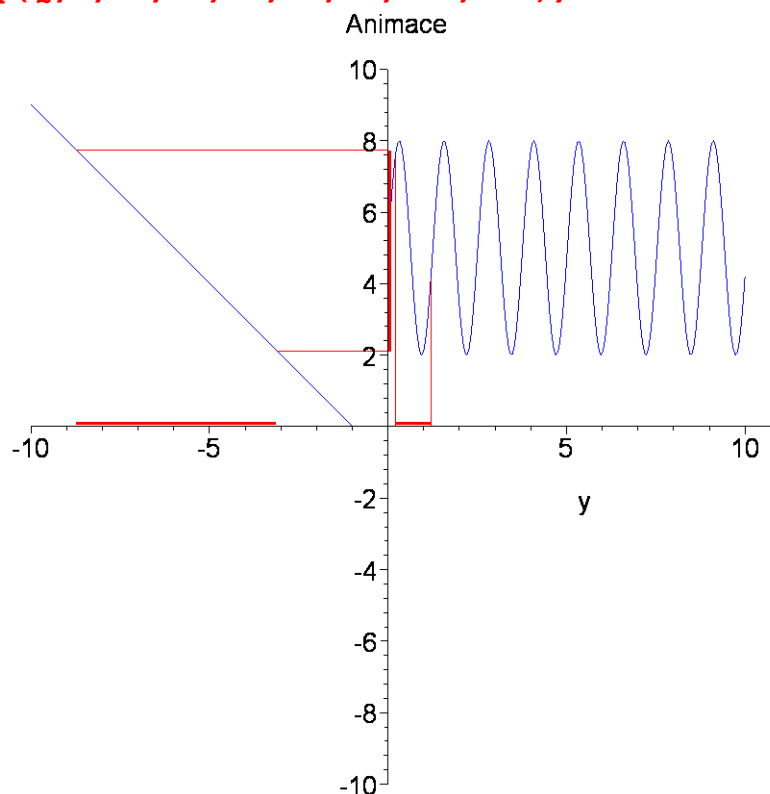

Animace

```
> 
```

animace2

```
> with(plots):
> Q:=plot(3*sin(5*x)+5,x=0..11,y=-10..10,adaptive=false,c
  olor=blue,title='Animace',axes=normal,numpoints=200):
> U:=plot(-x-1,x=-10..-1,y=-10..10,adaptive=false,color=b
  lue):
> P:=seq(plot(min(seq(3*sin(i+k)+5,k=0..5)),x=max(seq(-3*
  sin(i+l)-6,l=0..5))..0,y=-10..10,adaptive=false),i=1..5
  0):
> R:=seq(plot([j/5,x,x=0..3*sin(j)+5],y=-10..10,adaptive=
  false),j=1..50):
> S:=seq(plot([j/5+1,x,x=0..3*sin(j+5)+5],y=-10..10,adapt
```

```
    ive=false),j=1..50):
>   V:=seq(plot(0.1,x=i/5..i/5+1,y=-10..10,adaptive=false,c
    olor=red,thickness=3),i=1..50):
>
>   W:=seq(plot(max(seq(3*sin(i+k)+5,k=0..5)),x=min(seq(-3*
    sin(i+l)-6,l=0..5))..0,y=-10..10,adaptive=false),i=1..5
    0):
>   SF:=seq(plot([0.05,x,x=min(seq(3*sin(i+k)+5,k=0..5))..m
    ax(seq(3*sin(i+k)+5,k=0..5))],y=-10..10,adaptive=false,
    color=red,thickness=3),i=1..50):
>   SG:=seq(plot(0.1,x=min(seq(-3*sin(i+l)-6,l=0..5))..max(
    seq(-3*sin(i+l)-6,l=0..5)),y=-10..10,adaptive=false,col
    or=red,thickness=3),i=1..50):
>   SGG:=display(SG,insequence=true):
>   SFF:=display(SF,insequence=true):
>   VV:=display(V,insequence=true):
>   WW:=display(W,insequence=true):
>   PP:=display(P,insequence=true):
>   RR:=display(R,insequence=true):
>   SS:=display(S,insequence=true):
>   display(Q,U,PP,RR,SS,VV,WW,SGG,SFF);
```
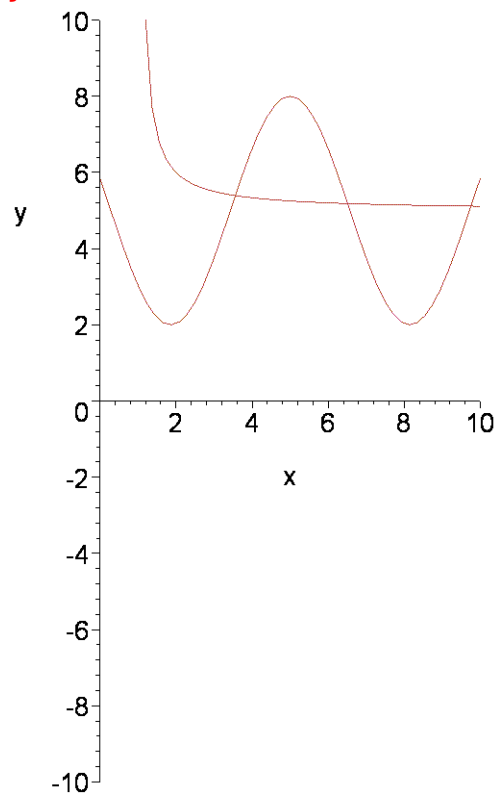

Animace

>

funkce $f(x) := 3\cos(x-5)+5$ **a funkce** $g(y) := \dfrac{1}{y-1}+5$ **; slozena funkce**

g(f(x))

graf funkci f a g

```
> with(plots):
> AB:=plot(1/(x-1)+5,x=1..10,y=-10..10,color=brown,adaptive=false):
> AC:=plot(3*cos(x-5)+5,x=0..10,y=-10..10,color=brown,adaptive=false):
> display({AB,AC});
```


animace1

```
> with(plots):
> U:=plot(0,x=-10..10,y=10..10,adaptive=false,title='Animace',axes=normal):
> WJ:=seq(plot([5+sin(i/5),x,x=0..3*cos((5+sin(i/5))-5)+5],y=-10..10,adaptive=false,color=green),i=1..100):
> WI:=plot(3*cos(x-5)+5,x=0..10,y=-10..10,adaptive=false,color=blue):
> P:=seq(plot(3*cos((5+sin(i/5))-5)+5,x=-1/(3*cos((5+sin(i/5))-5)+4)-5..5+sin(i/5),y=-10..10,adaptive=false,color=green),i=1..100):
> R:=seq(plot([-1/(3*cos((5+sin(i/5))-5)+4)-5,x,x=0..3*cos((5+sin(i/5))-5)+5],y=-10..10,adaptive=false,color=green),i=1..100):
> Q:=plot(-(1/(x+5))+1,x=-10..-5,y=-10..10,adaptive=false,color=blue):
```

```
> WJJ:=display(WJ,insequence=true):
> UU:=display(U,insequence=false):
> QQ:=display(Q,insequence=false):
> RR:=display(R,insequence=true):
> PP:=display(P,insequence=true):
> WII:=display(WI,insequence=false):
> display(UU,QQ,WJJ,WII,PP,RR);
```
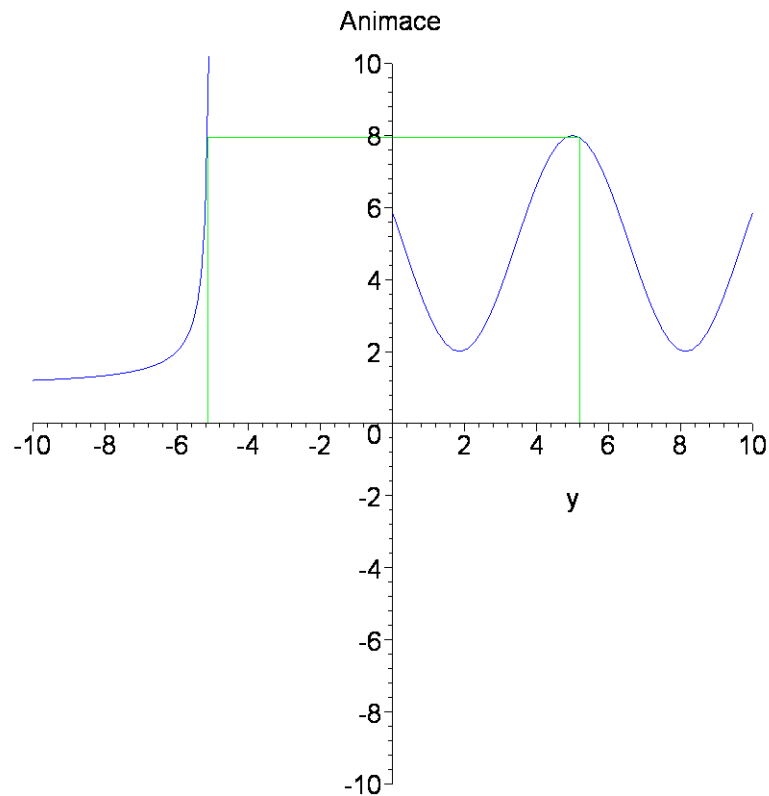

Animace
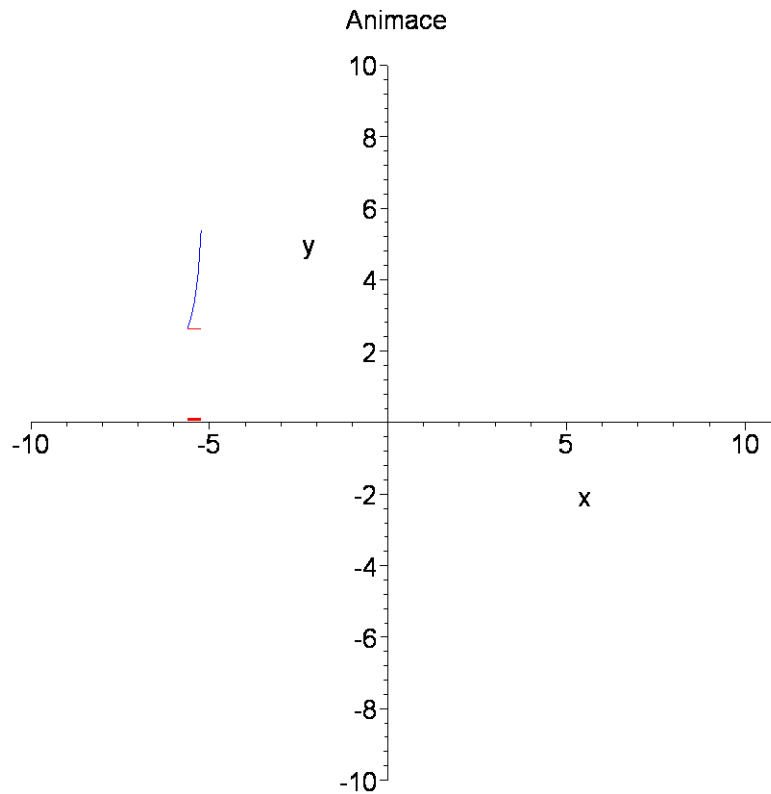
animace2

```
> with(plots):
> Q:=plot(3*cos(x-5)+5,x=0..11,y=-10..10,adaptive=false,c
  olor=blue,title='Animace',axes=normal):
> U:=plot(-(1/(x+5))+1,x=-10..-5,y=-10..0,adaptive=false,
  color=blue):
> P:=seq(plot(max(seq(3*cos(i/5-5+k/5)+5,k=0..5)),x=max(s
  eq(-1/(3*cos(i/5-5+l/5)+4)-5,l=0..5))..0,y=-10..10,adap
  tive=false),i=1..50):
> R:=seq(plot([j/5,x,x=0..3*cos(j/5-5)+5],y=-10..10,adapt
  ive=false),j=1..50):
> S:=seq(plot([j/5+1,x,x=0..3*cos((j+5)/5-5)+5],y=-10..10
  ,adaptive=false),j=1..50):
> V:=seq(plot(0.1,x=i/5..i/5+1,y=-10..10,adaptive=false,c
  olor=red,thickness=3),i=1..50):
> W:=seq(plot(min(seq(3*cos(i/5-5+k/5)+5,k=0..5)),x=min(s
  eq(-1/(3*cos(i/5-5+k/5)+4)-5,k=0..5))..0,y=-10..10,adap
  tive=false),i=1..50):
```

```
> SF:=seq(plot([0.05,x,x=min(seq(3*cos(i/5-5+k/5)+5,k=0..
  5))..max(seq(3*cos(i/5-5+k/5)+5,k=0..5))],y=-10..10,ada
  ptive=false,color=red,thickness=3),i=1..50):
> SG:=seq(plot(0.1,x=min(seq(-(1/(3*cos(i/5-5+k/5)+4))-5,
  k=0..5))..max(seq(-(1/(3*cos(i/5-5+k/5)+4))-5,k=0..5)),
  y=-10..10,adaptive=false,color=red,thickness=3),i=1..50
  ):
> SGG:=display(SG,insequence=true):
> SFF:=display(SF,insequence=true):
> VV:=display(V,insequence=true):
> WW:=display(W,insequence=true):
> PP:=display(P,insequence=true):
> RR:=display(R,insequence=true):
> SS:=display(S,insequence=true):
> display(Q,U,PP,RR,SS,VV,WW,SFF,SGG);
```

Animace


```
> 
> 
```