APPENDIX.

A 1.

codes

def snail(g,x,u0,n,xmin,xmax):

u = u0

P1 = plot(x,x,xmin = 0,xmax = 1,color='gray')

for i in range(n):

P1 += line([[u,u],[u,g(u)],[g(u),g(u)]],color = 'red', linestyle = '--')

u = g(u)

P1 += g.plot(x,xmin,xmax,color='blue', linestyle = ':')

P1.axes\_labels(['y','z'])

P1 += arrow((u,u),(u,g(u)), color ='red', width = 0, linestyle = '--')

P1 += arrow((u,g(u)),(g(u),g(u)),color = 'red', width = 0, linestyle = 'dashed')

P2 = text('$z=y$', (0.19,0.1), fontsize=15)

P3 = text('$9\*y\*e^{-5y}$',(0.1,0.7), fontsize =15)

P = P1+P2+P3

P.show()

f(x)=9\*x\*exp(-5\*x)

g(x)=f(f(x))

snail(g,x,0.15,8,0,1)

def snail(g,x,u0,n,xmin,xmax):

u = u0

P1 = plot(x,x,xmin = 0,xmax = 1,color='gray')

for i in range(n):

P1 += line([[u,u],[u,g(u)],[g(u),g(u)]],color = 'red', linestyle = '--')

u = g(u)

P1 += g.plot(x,xmin,xmax,color='blue', linestyle = ':')

P1.axes\_labels(['y','z'])

P1 += arrow((u,u),(u,g(u)), color ='red', width = 0, linestyle = '--')

P1 += arrow((u,g(u)),(g(u),g(u)),color = 'red', width = 0, linestyle = 'dashed')

P2 = text('$z=y$', (0.19,0.1), fontsize=15)

P3 = text('$9\*y\*e^{-5y}$',(0.1,0.7), fontsize =15)

P = P1+P2+P3

P.show()

f(x)=9\*x\*exp(-5\*x)

g(x)=f(f(x))

snail(g,x,0.7,8,0,1)

def snail(g,x,u0,n,xmin,xmax):

u = u0

P1 = plot(x,x,xmin=0,xmax=1,color='gray')

for i in range(n):

#P1 += line([[u,u],[u,g(u)],[g(u),g(u)]],color = 'red', linestyle = '--')

u = g(u)

P1 += g.plot(x,xmin,xmax,color='blue', linestyle = ':')

P1.axes\_labels(['y','z'])

#P1 += arrow((u,u),(u,g(u)), color ='red', width = 0, linestyle = '--')

# P1 += arrow((u,g(u)),(g(u),g(u)),color = 'red', width = 0, linestyle = 'dashed')

P2 = text('$z=y$', (0.19,0.1), fontsize=15)

P3 = text('$3.828\*y\*(1-y)$',(0.2,1), fontsize =15)

p4 = text('X',(0.15,0.15), fontsize=16)

p5 = text('X',(0.5,0.5), fontsize=16)

p6 = text('X',(0.958,0.958), fontsize=16)

P = P1+P2+P3+p4+p5+p6

P.show()

f(x)=3.828\*x\*(1-x)

g(x)=f(f(f(x)))

snail(g,x,0.4,5,0,1)