APPENDIX

CODES

PROBLEM 16

(a)

r= var('r')

p1 =plot(sqrt(-r),[-1,0],linestyle='--',axes\_labels=['r','x(r)'])

p2 =plot(-sqrt(-r),[-1,0],linestyle='-')

p3 =text('$x(r)=\sqrt{-r}$',(-0.45,0.9),fontsize=15,xmin=-1,xmax=1)

p4 =text('$x(r)=-\sqrt{-r}$',(-0.45,-0.9),fontsize=15,xmin=-1,xmax=1)

p =p1+p2+p3+p4

show(p)

(b)

r= var('r')

p1 =plot(sqrt(r),[0,1],linestyle='-',axes\_labels=['r','x(r)'])

p2 =plot(-sqrt(r),[0,1],linestyle='-')

p3 =plot(0,[0,1],linestyle='--')

p4 =text('$x(r)=\sqrt{r}$',(0.45,0.9),fontsize=15,xmin=-1,xmax=1)

p5 =text('$x(r)=\sqrt{-r}$',(0.45,-0.9),fontsize=15)

p6 =text('$x(r)=0$',(0.9,0.1),fontsize=15)

p =p1+p2+p3+p4+p5+p6

show(p)

(c)

r= var('r')

p1 =plot(-r,[-2,0],linestyle='--',axes\_labels=['r','x(r)'])

p2 =plot(-r,[0,2],linestyle='-')

p3 =plot(0,[0,2],linestyle='--')

p4 =text('$x(r)=-r$',(-0.45,0.9),fontsize=15,xmin=-1,xmax=1)

p5 =text('$x(r)=-r$',(0.45,-0.9),fontsize=15)

p6 =text('$x(r)=0$',(0.9,0.1),fontsize=15)

p =p1+p2+p3+p4+p5+p6

show(p)

PROBLEM 17

r= var('r')

p1 =plot(sqrt(r),[0,0.5],linestyle='-',axes\_labels=['r','x(r)'])

p2 =plot(-sqrt(r),[0,0.5],linestyle='-')

p3 =plot(-1+sqrt(r+1),[0,1],linestyle='--')

p4 =plot(-1+sqrt(r+1),[-1,0],linestyle='-')

p5 =plot(-1-sqrt(r+1),[-1,0],linestyle='--')

p6 =text('$x(r)=\sqrt{r}$',(0.2,0.7),fontsize=15,xmin=-1,xmax=1)

p7 =text('$x(r)=-\sqrt{r}$',(0.3,-0.8),fontsize=15)

p8 =text('$x(r)=-1+\sqrt{r}$',(0.9,0.5),fontsize=15)

p9 =text('$x(r)=-1+\sqrt{r+1}$',(-0.9,-0.3),fontsize=15)

p10=text('$x(r)=-1-\sqrt{r+1}$',(-0.9,-1.9),fontsize=15)

p =p1+p2+p3+p4+p5+p6+p7+p8+p9+p10

show(p)