Solución Examen de Computación 1 correspondiente al 15 de febrero de 2012

Problema 1:

```
%Problema 1.a)
function w=Union(u,v)
largou=length(u);
largov=length(v);
if largou==0 | largov==0
   w=[u,v];
else
   if u(1)<v(1)
     w=[u(1), Union(u(2:largou),v)];
   elseif u(1)>v(1)
     w=[v(1),Union(u,v(2:largov))];
   else
     w=[u(1),Union(u(2:largou),v(2:largov))];
   end
end

%problema 1.b)
function w=UnionIt(u,v)
largou=length(u);
largov=length(v);
i=1;
j=1;
w=[];
while i<=largou & j<=largov
   if u(i)<v(j)
     w=[w,u(i)];
     i=i+1;
   elseif v(j)<u(i)
     w=[w,v(j)];
     j=j+1;
   else
     w=[w,u(i)];
     i=i+1;
     j=j+1;
   end
end
w=[w,u(i:largou),v(j:largov)];

%Problema 1.c)
function w=Intersec(u,v)
largou=length(u);
largov=length(v);
if largov==0 | largou==0
   w=[];
else
   if u(1)==v(1)
```

```matlab
        w=[u(1), Intersec(u(2:largou),v(2:largov))];
    elseif u(1)<v(1)
        w=Intersec(u(2:largou),v);
    else
        w=Intersec(u,v(2:largov));
    end
end
```

Problema 2:

```matlab
%Problema 2.a)
function C=MayoresaCero(As,Ai,Aj)
l=length(As)
if l==0
    C=0;
else
    C=MayoresaCero(As(2:l),Ai(2:l),Aj(2:l);
    if As(1)>0
        C=C+1;
    end
end
```

```matlab
%Problema 2.b)
function [Ss,Si,Sj]=SumaM(An,Ai,Aj,Bn,Bi,Bj)
lA=length(An);
lB=length(Bn);
r=1;
k=1;
Sn=[];
Si=[];
Sj=[];
while r<=lA & k<=lB
    if Ai(r)==B(k)
        if Aj(r)==Bj(k)
            if An(r)+Bn(k) ~= 0
                Sn=[Sn An(r)+Bn(k)];
                Si=[Si Ai(r)];
                Sj=[Sj Aj(r)];
            end
            r=r+1;
            k=k+1;
        elseif Aj(r) < Bj(k)
            Sn=[Sn An(r)];
            Si=[Si Ai(r)];
            Sj=[Sj Aj(r)];
            r=r+1;
        else
            Sn=[Sn Bn(k)];
            Si=[Si Bi(k)];
            Sj=[Sj Bj(k)];
```

```matlab
        k=k+1;
    end
  elseif Ai(r) < Bi(k)
    Sn=[Sn An(r)];
    Si=[Si Ai(r)];
    Sj=[Sj Aj(r)];
    r=r+1;
  else
    Sn=[Sn Bn(k)];
    Si=[Si Bi(k)];
    Sj=[Sj Bj(k)];
    k=k+1;
  end
end
Sn=[Sn An(r:lA) Bn(k:lB)];
Si=[Si Ai(r:lA) Bi(k:lB)];
Sj=[Sj Aj(r:lA) Bj(k:lB)];

% Problema 2.c)
function R=Resta(An,Ai,Aj,Bn,Bi,Bj)
lA=length(An);
lB=length(Bn);
[Sn,Si,Sj]=sumaM(An,Ai,Aj,Bn,Bi,Bj);
ls=length(Sn);
R=lA+lB-lS;
```

Problema 3:

```matlab
%Problema 3.a)
function E=Esperanza(X,P)
l=length(X);
if l==0
   E=0;
else
   E=x(1)*P(1)+Esperanza(X(2:l),P(2:l));
end

%Problema 3.b)
function V=Varianza(X,P)
l=length(X);
E=Esperanza(X,P);
V=0;
for i=1:l
   V=V+P(i)*(X(i)-E);
end
```

Problemas 4: Ver material teórico.

Problema 5:

```
>> preguntal(4)
     1

     1

     2

     1

     3

     1

     4

     1


ans =

     4

>>
```

```
>> pregunta2(4)
      1

     11

      2

     12

      3

     13

      4

     14

      5

     15


ans =

      5

>>
```