

Question 1

(1)

```
h.d:=5;
h.c[0]:=3;
h.c[1]:=0;
h.c[2]:=-4;
h.c[3]:=0;
h.c[4]:=0;
h.c[5]:=7;
h.nom:='h';
```

(2)

```
procedure afficheCoeff(p:poly);
var i:integer;
begin
  for i:=0 to p.d do
    begin
      if p.c[i]<>0 then
        writeln('Coefficient de x^',i,' du
                polynome ',p.nom,' : ',p.c[i]);
      end
    end;
end;
```

(3) a)

```
function produit(a,b:poly):poly;
var i,j:integer;
begin
  if (a.d=0) and (a.c[0]=0) or (b.d=0) and (b.c[0]=0) then
    begin
      result.d:=0;
      result.c[0]:=0;
    end
  else
    begin
      result.d:=a.d+b.d;
      for i:=0 to result.d do result.c[i]:=0;
      for i:=0 to a.d do
        for j:=0 to b.d do
          result.c[i+j]:=result.c[i+j]+a.c[i]*b.c[j]
        end;
      end;
      result.nom:=a.nom+'*'+b.nom;
    end;
end;
```

b) q:=produit(h,h);

q:=produit(q,q);

//ou bien q:=produit(produit(h,h),produit(h,h));

Dans ce cas : q.nom = h*h*h*h et q.d = 20

(4) a)

```
function horner(p:poly;x:extended):extended;  
var i:integer;  
begin  
  result:=p.c[p.d];  
  for i:=p.d-1 downto 0 do  
    result:=result*x+p.c[i]  
end;
```

b)

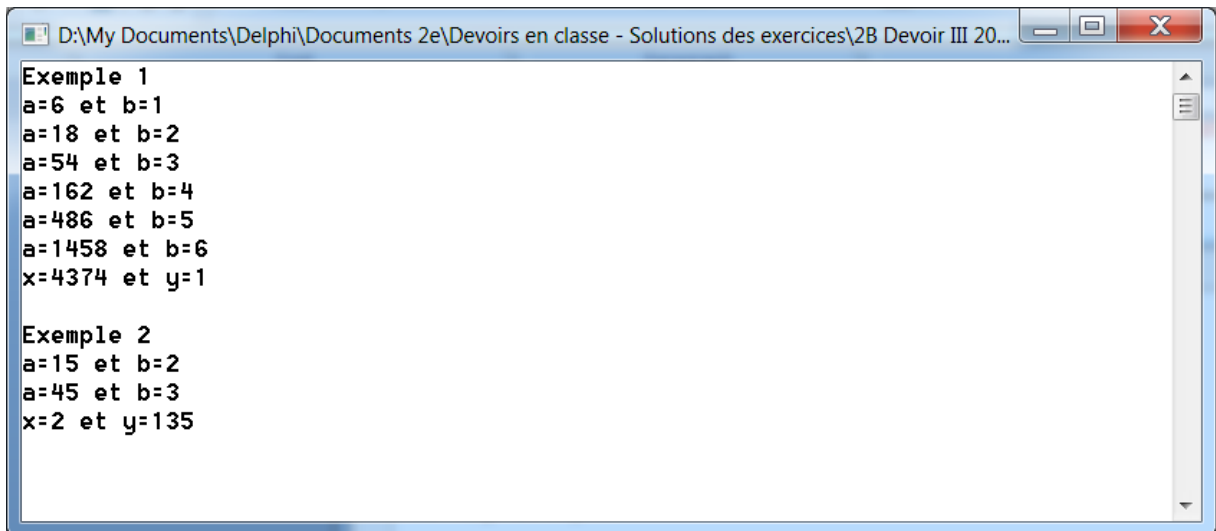
i	result
	7
4	$7*(-2)=-14$
3	$-14*(-2)=28$
2	$28*(-2)-4=-60$
1	$-60*(-2)=120$
0	$120*(-2)+3=-237$

Question 2

```
procedure randomFill(var l:list);  
var i:integer;  
begin  
  l.Length:=random(91)+10;  
  for i:=1 to l.Length do l.items[i]:=random(41)-20;  
end;  
  
function countIn(a,b:integer;l:list):integer;  
var i:integer;  
begin  
  result:=0;  
  for i:=1 to l.length do  
    if (l.items[i]>=a) and (l.items[i]<=b) then  
      result:=result+1  
end;  
  
function averageP(l:list):extended;  
var i,n:integer;  
begin  
  result:=0;  
  n:=0;  
  for i:=1 to l.length do  
    if l.items[i]>=0 then  
      begin  
        result:=result+l.items[i];  
        n:=n+1  
      end;  
    if n<>0 then result:=result/n else result:=-1  
end;
```

Question 3

10 points



The image shows a screenshot of a text editor window. The title bar at the top reads "D:\My Documents\Delphi\Documents 2e\Devoirs en classe - Solutions des exercices\2B Devoir III 20...". The window contains two sections of text, each starting with "Exemple".

```
Exemple 1  
a=6 et b=1  
a=18 et b=2  
a=54 et b=3  
a=162 et b=4  
a=486 et b=5  
a=1458 et b=6  
x=4374 et y=1  
  
Exemple 2  
a=15 et b=2  
a=45 et b=3  
x=2 et y=135
```