Exercício Semana 9

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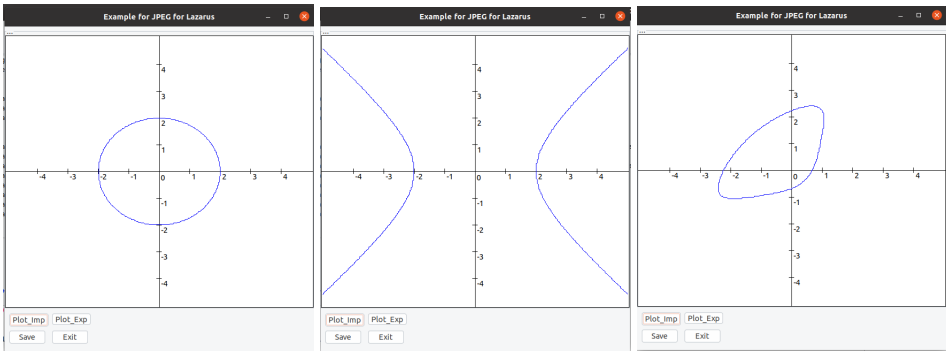
1 Exercício 1

Implemente o método de Curva Implícita no Botao1




```
procedure plotCruveImp;
var  tx,ty,pi,step,x,y,xnext,ynext,e1,e2,e3:real;
var  w,h,xstep,ystep,i,j,fraction:integer;
begin
    h := JPEGExampleForm.Image1.Height;
    w:= JPEGExampleForm.Image1.Width;
    fraction:=10;
    xstep := w div fraction;
    ystep := h div fraction;
    step  := 0.1;
    tx    := -5;
    ty    := 5;

    //looping in each line
    while   (ty > -5) do
    begin
          ynext := ty - step;
          tx    := -5;
```

```
while   (tx < 5) do
begin
      xnext := tx + step;
      //triangle 1
      e1 := f(tx,ty);
      e2 := f(xnext, ty);
      e3 := f(tx, ynext);

      // plotting lines when edges has different signals

      // e1 inside
      if (e1 < 0) and (e2 > 0) and (e3 > 0) then
      begin
           JPEGExampleForm.Image1.Canvas.Line(xToInteger(tx),yToInteger((ty+ynext)
      end;

      // e1 outside
      if (e1 > 0) and (e2 < 0) and (e3 < 0) then
      begin
           JPEGExampleForm.Image1.Canvas.Line(xToInteger(tx),yToInteger((ty+ynext)
      end;

      // e2 inside
      if (e1 > 0) and (e2 < 0) and (e3 > 0) then
      begin
           JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
      end;

      // e2 outside
      if (e1 < 0) and (e2 > 0) and (e3 < 0) then
      begin
           JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
      end;

      // e3 inside
      if (e1 > 0) and (e2 > 0) and (e3 < 0) then
      begin
           JPEGExampleForm.Image1.Canvas.Line(xToInteger(tx),yToInteger((ty+ynext)
      end;

      // e3 outside
      if (e1 < 0) and (e2 < 0) and (e3 > 0) then
      begin
           JPEGExampleForm.Image1.Canvas.Line(xToInteger(tx),yToInteger((ty+ynext)
      end;
```

```
        // triangle 2
        e1 := f(xnext, ty);
        e2 := f(xnext, ynext);
        e3 := f(tx, ynext);

        // plotting lines when edges has different signals
        // e1 inside
        if (e1 < 0) and (e2 > 0) and (e3 > 0) then
        begin
             JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
        end;

        // e1 outside
        if (e1 > 0) and (e2 < 0) and (e3 < 0) then
        begin
             JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
        end;

        // e2 inside
        if (e1 > 0) and (e2 < 0) and (e3 > 0) then
        begin
             JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
        end;

        // e2 outside
        if (e1 < 0) and (e2 > 0) and (e3 < 0) then
        begin
             JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
        end;

        // e3 inside
        if (e1 > 0) and (e2 > 0) and (e3 < 0) then
        begin
             JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
        end;
        // e3 outside
        if (e1 < 0) and (e2 < 0) and (e3 > 0) then
        begin
             JPEGExampleForm.Image1.Canvas.Line(xToInteger((tx+xnext)/2),yToInteger
        end;

        tx := xnext;
    end;
    ty := ynext;
```

```
    end;
end;
```