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SCALAR PRODUCTS &CONSERVATIVE VECTOR F

check if the vector field F(x, y) = (x^2)i+(8*y+2*x^3)j is conservative or n

```
(%i1) kill(all);
(%o0) done
```

```
(%i1) load(vect);
(%o1) C:/PROGRA~2/MAXIMA~1.1/share/maxima/5.21.1/share/vector/vect.mac
```

```
(%i2) scalefactors([x,y]);

      F(x,y) := [x^2 , 8*y + 2*x^3];
      ev(express(curl(F(x,y))), diff);
(%o2) done
(%o3) F(x,y):=[x^2,8 y+2 x^3]
(%o4) 6 x^2
```

```
(%i5) load(plotdf);
(%o5)
C:/PROGRA~2/MAXIMA~1.1/share/maxima/5.21.1/share/dynamics/plotdf.lisp
```

```
(%i9) plotdf(F(x,y),[x,y],[x,-4,4],[y,-4,4],
          [vectors,"green"]);
```

```
--> potential(F(x,y));
```

```
--> plot3d(, [x,-5,5],
          [y,-5,5], [plot_format,gnuplot],
       [gnuplot_pm3d,true])$
```