

>

實習19.2

> with(student) :

> f := (x, y) → exp(-(x + y - 2)<sup>2</sup>)

$f := (x, y) \mapsto e^{-(y+x-2)^2}$  (1)

> g := (x, y) → x<sup>3</sup> - 3·x·y + y<sup>3</sup>

$g := (x, y) \mapsto y^3 + x^3 - 3yx$  (2)

(1)

> with(student) :

> extrema(f(x, y), g(x, y) = 0, {x, y}, 's')

{1, e<sup>-1</sup>} (3)

> s

{ {x = 2/3, y = 4/3}, {x = 3/2, y = 3/2}, {x = 4/3, y = 2/3} } (4)

> f(2/3, 4/3)

1 (5)

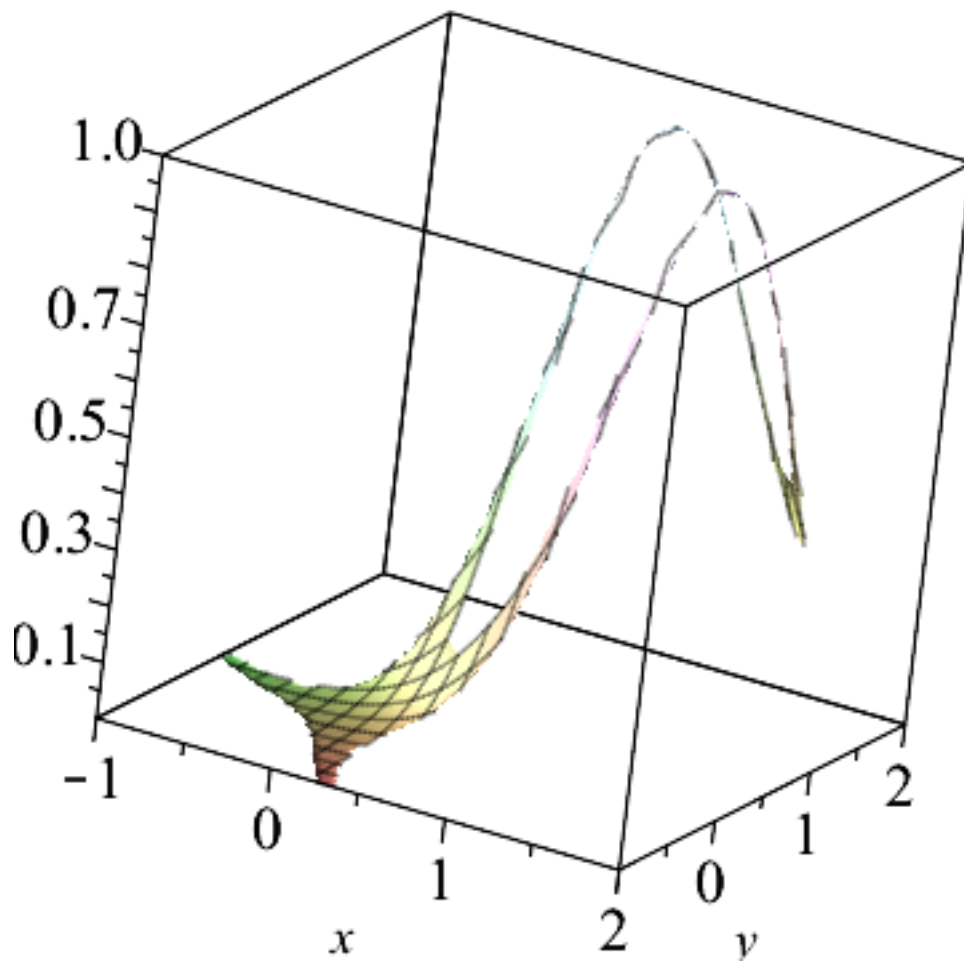
> f(3/2, 3/2)

e<sup>-1</sup> (6)

> f(4/3, 2/3)

1 (7)

> plot3d(pieciwise(-0.2 < g(x, y) and g(x, y) < 0.2, f(x, y), none), x=-1..2, y=-1..2, grid=[100, 100])



極大值  $f(2/3, 4/3) = f(4/3, 2/3) = 1$   
 極小值  $f(3/2, 3/2) = 1/e$

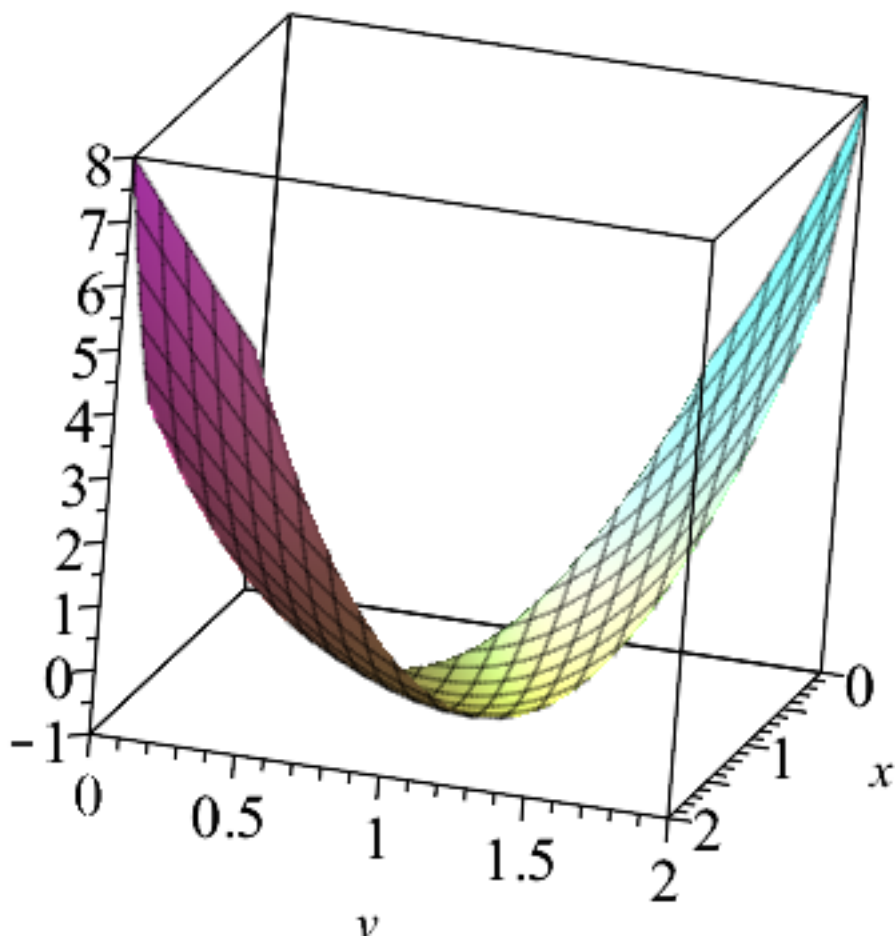
(2)

> *extrema*(*g*(*x*, *y*), *f*(*x*, *y*) = 1, {*x*, *y*}, 's')  
{-1} (8)

> *s*  
{{*x*=1, *y*=1}} (9)

> *f*(1, 1)  
1 (10)

> *plot3d*(*piecewise*( $0.8 < f(x, y)$  and  $f(x, y) < 1.2$ , *g*(*x*, *y*), *none*), *x*=0..2, *y*=0..2, *grid*  
 = [100, 100])



極大値 なし  
極小値  $f(1,1)=1$

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