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(*Calculations for "Tetrahedron Conjecture in the $\ell_2$-norm"*)
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In[•]:=
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f[x_, y_, z_] :=
  x * y * z + 1/2 (x^2 * y + y^2 * z + z^2 * x) + 1/50 ((x - 1/3)^2 + (y - 1/3)^2 + (z - 1/3)^2) - 5/54;
Maximize[{f[x, y, z], x ≥ 0 && y ≥ 0 && z ≥ 0 && x + y + z ≤ 1}, {x, y, z}]
```

Out[•]=
$$\left\{0, \left\{x \to \frac{1}{3}, y \to \frac{1}{3}, z \to \frac{1}{3}\right\}\right\}$$

In[•]:=
```
g[x_, y_] := 1/2 (x^2 * y + x * y^2) + 1/50 ((x - 1/2)^2 + (y - 1/2)^2) - 1/8;
Maximize[{g[x, y], x ≥ 0 && y ≥ 0 && x + y ≤ 1}, {x, y}]
```

Out[•]=
$$\left\{0, \left\{x \to \frac{1}{2}, y \to \frac{1}{2}\right\}\right\}$$