WebAssign
Hw 18 (14.8): Lagrange Multipliers (Homework)

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MA 261 Fall 2012, section 121, Fall 2012
Instructor: David Daniels

Current Score : 20 / 20 **Due :** Thursday, October 4 2012 11:00 PM EDT

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1. 3.33/3.33 points | Previous Answers SCalcET7 14.8.003.MI.

Use Lagrange multipliers to find the maximum and minimum values of the function subject to the given constraint. (If an answer does not exist, enter DNE.)

$f(x, y) = 3x^2 + 3y^2; \quad xy = 1$

maximum ✔

minimum ✔

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2. 3.33/3.33 points | Previous Answers SCalcET7 14.8.004.

Use Lagrange multipliers to find the maximum and minimum values of the function subject to the given constraint. (If an answer does not exist, enter DNE.)

$f(x, y) = 2x + 2y; \quad x^2 + y^2 = 2$

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maximum ✔

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minimum ✔

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3. 3.33/3.33 points | Previous Answers SCalcET7 14.8.007.

Use Lagrange multipliers to find the maximum and minimum values of the function subject to the given constraint. (If an answer does not exist, enter DNE.)

$$f(x, y, z) = 6x + 4y + 14z; \quad x^2 + y^2 + z^2 = 62$$

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maximum

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minimum

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4. 3.33/3.33 points | Previous Answers SCalcET7 14.8.009.

Use Lagrange multipliers to find the maximum and minimum values of the function subject to the given constraint. (If an answer does not exist, enter DNE.)

$f(x, y, z) = xyz; \quad x^2 + 2y^2 + 3z^2 = 24$

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maximum

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minimum

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5. 3.33/3.33 points | Previous Answers SCalcET7 14.8.019.

Find the extreme values of f on the region described by the inequality.

$$f(x, y) = x^2 + y^2 + 6x - 6y, \quad x^2 + y^2 \le 25$$

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maximum

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minimum

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6. 3.35/3.35 points | Previous Answers SCalcET7 14.8.037.

Use Lagrange multipliers to find the volume of the largest rectangular box in the first octant with three faces in the coordinate planes and one vertex in the given plane.

$$x + 7y + 4z = 21$$

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