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Problem 4

Checkboxes.

3/6 points (graded)

Quadratic functions are widely used for optimization purposes.

Which of the following statements are true?

Select all correct answers

- [x] A quadratic function takes the form of $y = ax^2 + bx + c$, where a, b, and c are numbers and a is not equal to zero.
- [x] Every quadratic equation has at least 2 roots.
- [ ] When a>0 the function is concave.
- [x] The graph of a quadratic equation is a parabola.
- [ ] None of the above.

✱

Submit You have used 2 of 2 attempts

✱ Partially correct (3/6 points)

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- [x] You should look for extreme points, where the objective function takes an extreme value.
- [x] The slope will always be zero at an extreme point.
- [x] The second order condition tells us if the extreme point is a local maximum or a local minimum.
- [ ] If the second derivative is different from zero, we know that we have found a global min or max.
- [ ] None of the above.

✔

Submit You have used 2 of 2 attempts

✔ Correct (6/6 points)

Checkboxes.

6/6 points (graded)

In Linear Programming problems:

Select all correct answers

- [ ] There will always be an unique optimal solution.
- [x] The feasible region is the space where all my feasible solutions are located.
- [x] The feasible region is bounded by the problem's constraints.

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- [ ] The decision variables have to be integers.
- [ ] All previous statements are false.

✔

Submit You have used 2 of 2 attempts

✔ Correct (6/6 points)

Checkboxes.

6/6 points (graded)

Imagine you are having a conversation with Maria, the operations manager of an important company. Let's see how well you understand what she is saying!

Select all correct answers

- [ ] If Maria is talking about her upstream supply chain, she is talking about her customers.
- [x] If Maria is talking about her upstream supply chain, she is talking about her suppliers.
- [ ] Maria describes the four primary cycles of a supply chain, which are: supplier collaboration cycle, manufacturing cycle, shipping cycle, financial cycle.
- [x] Maria describes the four primary cycles of a supply chain, which are: customer order cycle, replenishment cycle, manufacturing cycle, procurement cycle.
- [ ] None of the above.

✔

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Checkboxes.

6/6 points (graded)

Which of the following statements about algorithms and approximations are true?

Select all correct answers

- [x] Algorithms and aproximations are widely used to tackle complex supply chain problems.
- [ ] Algorithms and aproximations are only used to solve simple supply chain problems.
- [ ] Algorithms may take a long time to solve, but always provide an optimal solution.
- [ ] Approximations are only used in academia, companies do not trust approximations.
- [x] Algorithms and approximations may be combined with other techniques such as Mixed Integer Linear Programming.
- [ ] None of the above.

✔

Submit You have used 1 of 2 attempts

✔ Correct (6/6 points)