

## Unit 10 - Week 8

Course outline
How does an NPTEL online course work?
Week 0
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
<ul style="list-style-type: none"> <li>● Lecture 37 : The Jacobi symbol</li> <li>○ Lecture 38 : Binary quadratic forms</li> <li>● Lecture 39 : Equivalence of binary quadratic forms</li> <li>○ Lecture 40 : Discriminant of a binary quadratic form</li> <li>○ Lecture 41 : Reduction theory of integral binary quadratic forms</li> <li>○ Quiz : Assignment 8</li> <li>○ Assignment-8 Detailed Solutions</li> <li>○ Weekly Feedback</li> <li>○ Download Videos</li> </ul>
Week 9
Week 10
Week 11
Week 12
Live Session

## Assignment 8

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

**Due on 2020-11-11, 23:59 IST.**

Please note that multiple options may be correct.

1) Which of the following forms are equivalent to  $x^2 + 2xy + y^2$ ?

1 point

- $x^2$ ,
- $x^2 - 2xy + y^2$ ,
- $x^2 + 4xy + 4y^2$ ,
- $4x^2 + 4xy + y^2$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $x^2$ ,
- $x^2 - 2xy + y^2$ ,
- $x^2 + 4xy + 4y^2$ ,
- $4x^2 + 4xy + y^2$ .

2) Which of the following forms are equivalent to  $xy$ ?

0 points

- $x^2 - xy$ ,
- $2x^2 - xy$ ,
- $-xy$ ,
- $xy + y^2$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $x^2 - xy$ ,
- $-xy$ ,
- $xy + y^2$ .

3) Which of the following forms are definite?

1 point

- $x^2 + 2xy - 3y^2$ ,
- $x^2 + 3xy - 4y^2$ ,
- $2x^2 + 2xy + 3y^2$ ,
- $x^2 + 3xy + 3y^2$ ,
- none of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $2x^2 + 2xy + 3y^2$ ,
- $x^2 + 3xy + 3y^2$ ,

4) Which of the following forms are positive definite?

1 point

- $2x^2 + 2xy + 3y^2$ ,
- $2x^2 + 3xy + 4y^2$ ,
- $3x^2 + 2xy - 3y^2$ ,
- $2x^2 + 3xy - 3y^2$ ,
- none of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $2x^2 + 2xy + 3y^2$ ,
- $2x^2 + 3xy + 4y^2$ ,

5) Which of the following forms are negative definite?

1 point

- $-3x^2 + 2xy - 3y^2$ ,
- $3x^2 + 3xy - 4y^2$ ,
- $-2x^2 + 2xy - 3y^2$ ,
- $3x^2 + 3xy - 3y^2$ ,
- none of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $-3x^2 + 2xy - 3y^2$ ,
- $-2x^2 + 2xy - 3y^2$ ,

6) Which of the following forms are indefinite?

1 point

- $x^2 + 2xy - 3y^2$ ,
- $x^2 + 3xy - 4y^2$ ,
- $2x^2 + 2xy - 3y^2$ ,
- $x^2 + 3xy - 3y^2$ ,
- none of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $x^2 + 2xy - 3y^2$ ,
- $x^2 + 3xy - 4y^2$ ,
- $2x^2 + 2xy - 3y^2$ ,
- $x^2 + 3xy - 3y^2$ ,

7) Which of the following forms are reduced?

1 point

- $x^2 + 2xy + 3y^2$ ,
- $3x^2 + 2xy + 3y^2$ ,
- $2x^2 + 2xy + 3y^2$ ,
- $4x^2 + 2xy + 3y^2$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $2x^2 + 2xy + 3y^2$ ,
- $2x^2 + 2xy + 3y^2$ ,

8) Which of the following forms are reduced?

1 point

- $5x^2 - 2xy + 4y^2$ ,
- $5x^2 - 2xy + 5y^2$ ,
- $5x^2 - 2xy + 6y^2$ ,
- $5x^2 - 2xy + 7y^2$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $5x^2 - 2xy + 6y^2$ ,
- $5x^2 - 2xy + 7y^2$ .

9) Find the reduced form equivalent to  $5x^2 - 6xy + 2y^2$ .

1 point

- $x^2 + y^2$ ,
- $x^2 + xy + y^2$ ,
- $x^2 + 2xy + y^2$ ,
- $x^2 + 3xy + y^2$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $x^2 + y^2$ ,

10) Find the reduced form equivalent to  $6x^2 - 6xy + 3y^2$ .

1 point

- $x^2 + y^2$ ,
- $2x^2 + 2y^2$ ,
- $3x^2 + 3y^2$ ,
- $4x^2 + 4y^2$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $3x^2 + 3y^2$ ,