

## Unit 14 - Week 12

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## Assignment 12

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

**Due on 2020-12-09, 23:59 IST.**

Please note that multiple options may be correct.

1) Which of these continued fractions expansions satisfy  $x^2 + 2x - 504 = 0$ ? 1 point

- $[21, 2, 8, 2, 44]$ .
- $[21, 3, 8, 2, 44]$ .
- $[21, \bar{2}, 8, 2]$ .
- $[21, 3, 8, 2]$ .
- $[21, 2, \bar{8}]$ .
- $[21, 3, \bar{8}]$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $[21, 2, 8, 2, 44]$ .

2) Which of these continued fractions expansions satisfy  $5x^2 + x - 101 = 0$ ? 1 point

- $[4, 2, 1, 1, 8, 2]$ .
- $[4, 2, 2, 1, 8, 2]$ .
- $[4, 2, 1, 1, \bar{8}]$ .
- $[4, 2, 2, 1, \bar{8}]$ .
- $[4, 2, 1, \bar{1}]$ .
- $[4, 2, 2, \bar{1}]$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $[4, 2, 1, 1, \bar{8}]$ .

3) Which of these quadratic equations are satisfied by  $[11, \bar{7}]$ ? 1 point

- $x^2 + 15x + 43 = 0$ .
- $x^2 - 15x + 43 = 0$ .
- $-x^2 + 15x + 43 = 0$ .
- $-x^2 - 15x + 43 = 0$ .
- $-x^2 + 15x - 43 = 0$ .
- $x^2 - 15x - 43 = 0$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $x^2 - 15x + 43 = 0$ ,  
 $-x^2 + 15x - 43 = 0$ .

4) Which of these quadratic equations are satisfied by  $[7, \bar{5}]$ ? 1 point

- $x^2 + 9x + 13 = 0$ .
- $-x^2 + 9x + 13 = 0$ .
- $x^2 - 9x + 13 = 0$ .
- $x^2 + 9x - 13 = 0$ .
- $-x^2 - 9x + 13 = 0$ .
- $x^2 - 9x - 13 = 0$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $x^2 - 9x + 13 = 0$ .

5) Which of these numbers have purely periodic continued fractions expansion? 1 point

- $3 + \sqrt{8}$ .
- $4 + \sqrt{17}$ .
- $5 + \sqrt{29}$ .
- $6 + \sqrt{31}$ .
- $7 + \sqrt{51}$ .
- $8 + \sqrt{67}$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $4 + \sqrt{17}$ ,  
 $5 + \sqrt{29}$ ,  
 $7 + \sqrt{51}$ ,  
 $8 + \sqrt{67}$ .

6) Which of the following elements are units in the ring of algebraic integers of  $\mathbb{Q}(\sqrt{-1})$ ? 1 point

- $\sqrt{-1}$ .
- $\frac{2}{3} + \frac{1}{3}\sqrt{-1}$ .
- $\frac{3}{8} - \frac{1}{8}\sqrt{-1}$ .
- $-\frac{3}{5} + \frac{4}{5}\sqrt{-1}$ .
- $-\frac{3}{5} - \frac{4}{5}\sqrt{-1}$ .
- $-\sqrt{-1}$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $\sqrt{-1}$ ,  
 $-\sqrt{-1}$ .

7) Which of the following elements are units in the ring of algebraic integers of  $\mathbb{Q}(\sqrt{-3})$ ? 1 point

- $\sqrt{-3}$ .
- $\frac{1}{2} + \frac{1}{2}\sqrt{-3}$ .
- $\frac{1}{2} - \frac{1}{2}\sqrt{-3}$ .
- $-\frac{1}{2} + \frac{1}{2}\sqrt{-3}$ .
- $-\frac{1}{2} - \frac{1}{2}\sqrt{-3}$ .
- $-\sqrt{-3}$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $\frac{1}{2} + \frac{1}{2}\sqrt{-3}$ ,  
 $\frac{1}{2} - \frac{1}{2}\sqrt{-3}$ ,  
 $-\frac{1}{2} + \frac{1}{2}\sqrt{-3}$ ,  
 $-\frac{1}{2} - \frac{1}{2}\sqrt{-3}$ .

8) Which of the following elements are units in the ring of algebraic integers of  $\mathbb{Q}(\sqrt{-5})$ ? 1 point

- 1.
- $\frac{2}{3} + \frac{1}{3}\sqrt{-5}$ .
- $\frac{2}{3} - \frac{1}{3}\sqrt{-5}$ .
- $-\frac{2}{3} + \frac{1}{3}\sqrt{-5}$ .
- $-\frac{2}{3} - \frac{1}{3}\sqrt{-5}$ .
- 1.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
1,  
-1

9) Which of the following elements are units in the ring of algebraic integers of  $\mathbb{Q}(\sqrt{2})$ ? 1 point

- $\sqrt{2}$ .
- $1 + \sqrt{2}$ .
- $3 + 2\sqrt{2}$ .
- $3 - 2\sqrt{2}$ .
- $1 - \sqrt{2}$ .
- $-\sqrt{2}$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $1 + \sqrt{2}$ ,  
 $3 + 2\sqrt{2}$ ,  
 $3 - 2\sqrt{2}$ ,  
 $1 - \sqrt{2}$ .

10) Which of the following elements are units in the ring of algebraic integers of  $\mathbb{Q}(\sqrt{3})$ ? 1 point

- $\sqrt{3}$ .
- $1 + \sqrt{3}$ .
- $2 + \sqrt{3}$ .
- $1 - \sqrt{3}$ .
- $2 - \sqrt{3}$ .
- $-\sqrt{3}$ .

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $2 + \sqrt{3}$ ,  
 $2 - \sqrt{3}$ .