Homework 5

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Homework 5-1

2.0/2.0 points (graded)

The elliptic curve

$$Y^2 = X^3 - 4$$

has only two integral points (S, T) with $T > 0$. One of them is $(S, T) = (2, 2)$.

Find the second point.

$S =$

5 ✔

$\mathbf{5}$

$T =$

11 ✔

$\mathbf{11}$

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Homework 5-2

2.0/2.0 points (graded)

Let

$$E : Y^2 = X^3 + AX + B$$

be an elliptic curve, and let

$$f(q) = q + C_2 q^2 + C_3 q^3 + C_4 q^4 + C_5 q^5 + \dots$$

be a modular form associated with E by modularity. Assume that $4A^3 + 27B^2$ is not divisible by 13, and $C_{13} = 5$.

What is the number of $\mathbf{mod}\ 13$ points on E?

9 ✔

9

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Homework 5-3

2.0/2.0 points (graded)

Many recent results on the BSD Conjecture, including the results of Skinner, Urban, and Zhang, are obtained by applying the methods of a theory generalizing Kummer's work in the 19th century on the special values of the Riemann zeta function and Fermat's Last Theorem.

What is the name of this theory?

- ○ Euler Theory
- ◉ Iwasawa Theory ✔
- ○ Kummer Theory
- ○ Takagi Theory

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Homework 5-4-1

1.0/1.0 point (graded)
Fill in the blank with an integer.

The radical of the ABC triple $(5, 7, 12)$ is 21 ✔

210

.

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Homework 5-4-2

1.0/1.0 point (graded)
Fill in the blank with an integer.

The radical of the ABC triple $(27, 64, 91)$ is 54 ✔

546

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English ▼

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