Math 3010 Quiz01
Due Jan 26
Dr. Smith

The quiz questions are based on the American Experience episode: "The Codebreakers" and the two videos on the Pythagorean Theorem by Dr. Wildberger. You are allowed to rewatch any of the videos after seeing the quiz (or while taking it) but you may not discuss the quiz with anyone. One or two sentences is all that is required for the answer to the questions, except for the last one.

1. Elizebeth and William (her future husband) met while working on a project; what was the purpose of the project they were working on?

They were recruited (at Riverdale Iinstitute) to find a code in the manuscripts of Shakespeare that would show that Francis Bacon wrote the works of Shakespeare.

2. What kind of code were they looking for in the answer to question 1?

A binary code (the example give was with a's and b's) invented by Bacon where each sequence of five symbols stood for a letter. Two different typefaces corresponded (it was thought by their employers) to the a and b symbols.

3. What was Elizebeth working on between the world wars?

She broke codes used by prohibition "runners" and organized criminals for the Coast Guard and helped put some of them in prison.

4. What was "purple"?

A Japanese code/coding device sed during WW II.

5. What did Elizebeth accomplish in support of American war effort during World War II?

She broke the code of Nazi agents in South America; this helped Allied shipping avoid German submarines. The Nazi agent codenamed Sargo in particular is mentioned.

6. Who unfairly took credit for Elizebeth's accomplishments and why didn't she say anything about it.

J. Edgar Hoover. Elizebeth took an oath not to reveal the work that she did.

7. What did Dr. Wildberger say happened to the mathematician who revealed the existence of irrational numbers outside of the Pythagorean Society?

He said that the mathematician was thrown overboard from a ship so that he (probably) drowned.

8. Dr. Wildberger posited that the mathematician mentioned in #7, as a result of the reaction described in #7 above, interacted with certain animals; which animals are these?

He said that the mathematician was thrown to the Sharks; there is no historical evidence for this and the comment was not intended to be taken literally.

9. What evidence did Dr. Wildberger give for the assumption that the Babylonians knew the Pythagorean theorem?

The existence of cuneiform tablets with tables of Pythagorean triples. (I gave half credit if you mixed this up with the knotted rope of the Egyptians.)

10. In the second video on the Pythagorean Theorem, Dr. Wildberger showed how to generate numbers x and y so that $x^2 + y^2 = 1$ using a parameter t.

    a. For the parameter $t = \frac{3}{4}$ what values of x and y are produced?

$$x = \frac{7}{25} ; y = \frac{24}{25}.$$

    b. The values of x and y from part a above can be used to generate a Pythagorean triple. Which triple is generated?

$$7, 24, 25.$$