

## Math 100, Spring '15

### Supplementary Homework on the Golden Ratio

These questions relate to the paper Misconceptions about the Golden Ratio by George Markowsky, which appeared in the College Mathematics Journal, v23 n1 p2-19 Jan 1992. You can find it at his web site, <http://umcs.maine.edu/~markov/GoldenRatio.pdf>

DO NOT TURN THESE IN! I haven't yet decided how to collect your answers (probably with a 'quiz' on MML, once I figure out how to write one). You may work on these with friends if you like. Or even with enemies.

1. If the ratio of the side to the base of an isosceles triangle is  $\phi$ , what is the apex angle (the angle between the two equal sides)?
2. Makowski discusses the history of terms like "golden ratio", "golden section", and "divine proportion". Which one (if any) goes back to Greek times? Which to the Renaissance period? Which one is 19th century?
3. The Great Pyramid of Cheops is often said to have Golden Ratio proportions. The ratio of which dimensions of this pyramid is claimed to equal  $\phi$ ?
4. Give three of the arguments Makowski makes that the pyramid story is bogus.
5. Several paintings or drawings of da Vinci are often said to intentionally use the golden ratio. What is the most telling argument that he did not use this in his painting of St. Jerome?
6. Makowski quotes Malcolm Browne (p.15) as saying that a particular way of measuring the human body produces roughly the golden ratio. Figure out what he means by this, do this measurement on yourself, and keep track of the number; I'm going to do an (anonymous) clicker poll next week to see how close the class average comes to  $\phi$ .
7. Which classical Roman adventure novel is often claimed to have its passages in golden ratio to one another?