



Problem Set of the Week

Problem 1 - Logic

(★)

Sometimes the word “is” can be replaced with the equality sign (=). State in which of the following sentences can this replacement be meaningfully accomplished?

1. The female of the species is more deadly than the male.
2. Silence is the most perfect expression of scorn.
3. Imitation is the sincerest form of flattery.
4. A little learning is a dangerous thing.
5. Knowledge is power, hide it well.

Problem 2 - Geometry

(★★)

How many regular polygons have the property that each one of their interior angles, measured in degrees, is an integer?

Problem 3 - Algebra

(★★★)

Let x and y be real numbers and let f , g , and h be a real-valued functions. Find a non-trivial example of each function.

1. $f(xy) = f(x)f(y)$
2. $g(x + y) = g(x) + g(y)$
3. $h(xy) = xh(y) + yh(x)$

Rules: Solve one problem or solve them all. Submit solutions to Dr. Luke Grabarek in Snodgrass Hall 103A or via e-mail at lgrabarek@matsu.alaska.edu. All submissions will be awarded a ★ and, in addition, correct solutions receive the ★ rating of the problem.

“Pure mathematics is, in its way, the poetry of logical ideas.” -Albert Einstein