

Problem of the Month
(January)

Name

Key

Date Submitted _____

Time Submitted _____

Solution

Prove that $\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6+\dots}}}}$ is equal to 3

$$x = \sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$$

$$x^2 = \left(\sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}} \right)^2$$

$$x^2 = 6 + \sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$$

$$x^2 = 6 + x$$

$$x^2 - x - 6 = 0$$

$$(x-3)(x+2) = 0$$

$$x = 3 \text{ or } x = -2$$

$$\therefore \boxed{x = 3}$$

\$10 prize for the first correct solution submitted to the receptionist.

Deadline for submission – Mon. Jan. 17 @ 8:43 am