

December 6th

The positive integers y and 16 are such that their arithmetic mean exceeds their geometric mean by 2.

Find the possible values of y .



Arithmetic mean: $\frac{y+16}{2}$

Geometric mean: $\sqrt{16y} = 4\sqrt{y}$

Using the information given

$$\frac{y+16}{2} = 4\sqrt{y} + 2$$

Hence

$$y + 16 = 8\sqrt{y} + 4$$

$$y - 8\sqrt{y} + 12 = 0$$

$$(\sqrt{y} - 6)(\sqrt{y} - 2) = 0$$

$$\mathbf{y = 36 \text{ or } y = 4}$$