16. For which value of k is $\sqrt{2016} + \sqrt{56}$ equal to 14^k ?

A $\frac{1}{2}$ B $\frac{3}{4}$ C $\frac{5}{4}$ D $\frac{3}{2}$ E $\frac{5}{2}$

---

16. D The expression $\sqrt{2016} + \sqrt{56}$ can be written as $\sqrt{2^5 \times 3^2 \times 7} + \sqrt{2^3 \times 7}$ which is $\sqrt{4^2 \times 3^2 \times 2 \times 7} + \sqrt{2^2 \times 2 \times 7}$. This simplifies to $12\sqrt{14} + 2\sqrt{14}$ which is $14\sqrt{14}$ and, using index notation, this can be written as $14^{3/2}$. Hence $k = \frac{3}{2}$.