

-12
(307)

$$a_1 = 5$$

$$a_{10} = 8$$

$$a_{10} = a_1 \cdot q^9$$

$$8 = 5 \cdot q^9$$

$$q = \sqrt[9]{16}$$

$$b_1 = 9$$

$$b_{10} = 11$$

$$b_{10} = b_1 \cdot p^9$$

$$11 = 9 \cdot p^9$$

$$p = \sqrt[9]{\frac{11}{9}}$$

$$a_n > b_n$$

$$a_1 q^{n-1} > b_1 p^{n-1}$$

$$8 \left(\sqrt[9]{16}\right)^{n-1} > 11 \left(\sqrt[9]{\frac{11}{9}}\right)^{n-1}$$

$$\left(\sqrt[9]{\frac{16}{9}}\right)^{n-1} > \frac{11}{8} \rightarrow \left(\sqrt[9]{\frac{14.4}{11}}\right)^{n-1} > \frac{11}{8} \quad / \log_{\sqrt[9]{\frac{14.4}{11}}}$$

$$(n-1) > \log_{\sqrt[9]{\frac{14.4}{11}}} \left(\frac{11}{8}\right) = 10.64$$

$$n > 11.64 \rightarrow \boxed{n=12}$$