

Đáp án bài 45 trang 27 SGK toán đại số lớp 9 tập 1

Đề bài:

So sánh:

a) $3\sqrt{3}$ và $\sqrt{12}$

b) 7 và $3\sqrt{5}$

c) $\frac{1}{3}\sqrt{51}$ và $\frac{1}{5}\sqrt{150}$;

d) $\frac{1}{2}\sqrt{6}$ và $6\sqrt{\frac{1}{2}}$.

Đáp án:

a) Ta có:

$$3\sqrt{3} = \sqrt{3^2 \cdot 3} = \sqrt{9 \cdot 3} = \sqrt{27}.$$

$$\text{Vì } 27 > 12 \Leftrightarrow \sqrt{27} > \sqrt{12}$$

$$\Leftrightarrow 3\sqrt{3} > \sqrt{12}.$$

$$\text{Vậy: } 3\sqrt{3} > \sqrt{12}.$$

b) Ta có:

$$7 = \sqrt{7^2} = \sqrt{49}.$$

$$3\sqrt{5} = \sqrt{3^2 \cdot 5} = \sqrt{9 \cdot 5} = \sqrt{45}.$$

$$\text{Vì } 49 > 45 \Leftrightarrow \sqrt{49} < \sqrt{45} \Leftrightarrow 7 > 3\sqrt{5}.$$

$$\text{Vậy: } 7 > 3\sqrt{5}.$$

c) Ta có:

$$\frac{1}{3}\sqrt{51} = \sqrt{\left(\frac{1}{3}\right)^2 \cdot 51} = \sqrt{\frac{1}{9} \cdot 51} = \sqrt{\frac{51}{9}}$$

$$= \sqrt{\frac{3 \cdot 17}{3 \cdot 3}} = \sqrt{\frac{17}{3}}$$

$$\frac{1}{5}\sqrt{150} = \sqrt{\left(\frac{1}{5}\right)^2 \cdot 150} = \sqrt{\frac{1}{25} \cdot 150} = \sqrt{\frac{150}{25}}$$

$$= \sqrt{\frac{6 \cdot 25}{25}} = \sqrt{6} = \sqrt{\frac{18}{3}}$$

$$\begin{aligned} \text{Vì } \frac{17}{3} < \frac{18}{3} &\Leftrightarrow \sqrt{\frac{17}{3}} < \sqrt{\frac{18}{3}} \\ &\Leftrightarrow \frac{1}{3}\sqrt{51} < \frac{1}{5}\sqrt{150}. \end{aligned}$$

$$\text{Vậy: } \frac{1}{3}\sqrt{51} < \frac{1}{5}\sqrt{150}.$$

d) Ta có:

$$\begin{aligned}\frac{1}{2}\sqrt{6} &= \sqrt{\left(\frac{1}{2}\right)^2 \cdot 6} = \sqrt{\frac{1}{4} \cdot 6} = \sqrt{\frac{6}{4}} = \sqrt{\frac{2 \cdot 3}{2 \cdot 2}} \\ &= \sqrt{\frac{3}{2}}.\end{aligned}$$

$$6\sqrt{\frac{1}{2}} = \sqrt{6^2 \cdot \frac{1}{2}} = \sqrt{36 \cdot \frac{1}{2}} = \sqrt{\frac{36}{2}}.$$

$$\begin{aligned}\forall \text{I } \frac{3}{2} < \frac{36}{2} &\Leftrightarrow \sqrt{\frac{3}{2}} < \sqrt{\frac{36}{2}} \\ &\Leftrightarrow \frac{1}{2}\sqrt{6} < 6\sqrt{\frac{1}{2}}.\end{aligned}$$

$$\text{Vậy: } \frac{1}{2}\sqrt{6} < 6\sqrt{\frac{1}{2}}.$$