ROMANIAN MATHEMATICAL MAGAZINE

If $a,b>0$ and $a+b=2$ then:

$$2\left(\sqrt{a+3}+\sqrt{b+3}\right)+3\left(\sqrt{a+8}+\sqrt{b+8}\right)\leq 26$$

Proposed by Marin Chirciu-Romania

Solution by Tapas Das-India

$$2\left(\sqrt{a+3}+\sqrt{b+3}\right)+3\left(\sqrt{a+8}+\sqrt{b+8}\right)\overset{CBS}{\leq}$$

$$\leq 2\sqrt{2(a+3+b+3)}+3\sqrt{2(a+8+b+8)}=$$

$$=2\sqrt{2(a+b)+12}+3\sqrt{2(a+b)+32}\overset{a+b=2}{=}2\sqrt{16}+3\sqrt{36}=26$$

$$Equality\ holds\ for\ a=b=1$$