

$$\begin{aligned} &> \text{dpsy}\left(\frac{a}{b+c}, 1, \frac{3}{2}, 1\right) \\ & \quad 0.203 \\ & \quad \frac{3}{4} \frac{a(4a+b+c)}{2a^2+ab+ac+2b^2+bc+2c^2} \leq \frac{a}{b+c} \end{aligned} \tag{1}$$

$$\begin{aligned} &> \text{dpsy}\left(\frac{b \cdot c}{a^2+3 \cdot b \cdot c}, -1, \frac{3}{4}, 1\right) \\ & \quad 0.563 \\ & \quad \frac{bc}{a^2+3bc} \leq \frac{1}{8} \frac{4ab+4ac+21b^2-2bc+21c^2}{7a^2+ab+ac+7b^2+bc+7c^2} \end{aligned} \tag{2}$$

$$\begin{aligned} &> \text{dpsy}\left(\frac{a^2}{3 \cdot a^2+(b+c)^2}, 1, \frac{1}{3}, 1\right) \\ & \quad 0.218 \\ & \quad \frac{1}{3} \frac{a^2}{a^2+b^2+c^2} \leq \frac{a^2}{3a^2+(b+c)^2} \end{aligned} \tag{3}$$

$$\begin{aligned} &> \text{dpsy}\left(\frac{a^2}{3 \cdot a^2+(b+c)^2}, -1, \frac{1}{2}, 1\right) \\ & \quad 0.828 \\ & \quad \frac{a^2}{3a^2+(b+c)^2} \leq \frac{1}{12} \frac{4a^2+ab+ac+b^2-2bc+c^2}{a^2+b^2+c^2} \end{aligned} \tag{4}$$

$$\begin{aligned} &> \text{dpsy}\left(\frac{a^2+\frac{3 \cdot a \cdot b \cdot c}{\text{sgm}(a)}}{(b+c)^2}, 1, \frac{3}{2}, 1\right) \\ & \quad 6.907 \\ & \quad \frac{3}{4} \frac{(b-c+2a)(-b+c+2a)}{a^2+ab+ac+b^2+bc+c^2} \leq \frac{a^2+\frac{3abc}{a+b+c}}{(b+c)^2} \end{aligned} \tag{5}$$

$$\begin{aligned} &> \text{dpsy}\left(\frac{a^2 \cdot (b+c)}{\text{sgm}(a) \cdot (b^2+c^2)}, 1, 1, 1\right) \\ & \quad 5.219 \\ & \quad \frac{1}{6} \frac{8a^2-ab-ac-b^2+2bc-c^2}{a^2+b^2+c^2} \leq \frac{a^2(b+c)}{(a+b+c)(b^2+c^2)} \end{aligned} \tag{6}$$

$$\begin{aligned} &> \text{dpsy}\left(\frac{a \cdot b}{(a+b+c)^2-c^2}, -1, \frac{3}{8}, 1\right) \\ & \quad 0.891 \\ & \quad \frac{ab}{(a+b+c)^2-c^2} \leq \frac{1}{16} \frac{3a^2+14ab+2ac+3b^2+2bc}{a^2+3ab+3ac+b^2+3bc+c^2} \end{aligned} \tag{7}$$

$$> \text{dpsy}\left(\frac{(b+c)^2}{a^2+b \cdot c}, 1, 6, 1\right)$$

$$\frac{4.454}{4a^2 + ab + ac + 4b^2 + bc + 4c^2} \leq \frac{(b+c)^2}{a^2 + bc} \quad (8)$$

$$> \text{dpsy} \left(\frac{(b+c-a)^2}{a^2 + (b+c)^2}, 1, \frac{3}{5}, 1 \right)$$

$$\frac{0.797}{5} \frac{113a^2 + 56ab + 56ac - 85b^2 - 250bc - 85c^2}{19a^2 + 46ab + 46ac + 19b^2 + 46bc + 19c^2} \leq \frac{(b+c-a)^2}{a^2 + (b+c)^2} \quad (9)$$

$$> \text{dpsy} \left(\frac{(2 \cdot a + b + c)^2}{2 \cdot a^2 + (b+c)^2}, -1, 8, 1 \right)$$

$$\frac{0.578}{2a^2 + (b+c)^2} \leq \frac{6a^2 + 14ab + 14ac + b^2 + 4bc + c^2}{a^2 + 4ab + 4ac + b^2 + 4bc + c^2} \quad (10)$$

$$> \text{dpsy} \left(\frac{\text{sgm}(a \cdot b)}{(b+c)^2}, 1, \frac{9}{4}, 1 \right)$$

$$\frac{1.484}{4} \frac{10a^2 + 4ab + 4ac - 2b^2 + 7bc - 2c^2}{2a^2 + 5ab + 5ac + 2b^2 + 5bc + 2c^2} \leq \frac{ab + ac + bc}{(b+c)^2} \quad (11)$$

$$> \text{dpsy} \left(\frac{a \cdot \text{sgm}(a)}{a^2 + \text{sgm}(a)^2}, -1, \frac{9}{10}, 1 \right)$$

$$\frac{0.563}{a^2 + (a+b+c)^2} \leq \frac{9}{10} \frac{a(2c+a+2b)}{a^2 + 4ab + 4ac + b^2 + 4bc + c^2} \quad (12)$$

$$> \text{dpsy} \left(\frac{\text{sgm}(a \cdot b)^2 + b^2 \cdot c^2}{\text{sgm}(a \cdot b) \cdot (b+c)^2}, 1, \frac{5}{2}, 1 \right)$$

$$\frac{8.922}{2} \frac{7a^2 + 2ab + 2ac - b^2 + 6bc - c^2}{(a+b+c)^2} \leq \frac{(ab+ac+bc)^2 + b^2c^2}{(ab+ac+bc)(b+c)^2} \quad (13)$$

$$> \text{dpsy} \left(\frac{\text{sgm}(a)^2}{b^2 + b \cdot c + c^2 + \frac{(b-c)^2}{23}}, 1, 9, 1 \right)$$

$$\frac{3.937}{2} \frac{62a^2 + 14ab + 14ac - 7b^2 + 38bc - 7c^2}{8a^2 + 11ab + 11ac + 8b^2 + 11bc + 8c^2} \leq \frac{(a+b+c)^2}{b^2 + bc + c^2 + \frac{1}{23}(b-c)^2} \quad (14)$$

$$> \text{dpsy} \left(\frac{a}{\sqrt{a^2 + b^2 + bc + c^2}}, -1, \frac{3}{2}, 2 \right)$$

$$5.750$$

$$(15)$$

$$\frac{a}{\sqrt{a^2 + b^2 + bc + c^2}} \leq \frac{3}{4} \frac{a(10a + 7b + 7c)}{5a^2 + 7ab + 7ac + 5b^2 + 7bc + 5c^2} \quad (15)$$

$$\begin{aligned} &> \text{dpsy} \left(\frac{a+b+c}{\sqrt{b^2 + \frac{17}{16} \cdot b \cdot c + c^2}}, 1, \frac{36}{17}, 2 \right) \\ &1.875 \end{aligned}$$

$$\begin{aligned} &\frac{3}{1156} \frac{(-17 + 5\sqrt{17})(15\sqrt{17}b + 15\sqrt{17}c + 68a + 17b + 17c)}{a+b+c} \\ &\leq \frac{4(a+b+c)}{\sqrt{16b^2 + 17bc + 16c^2}} \end{aligned} \quad (16)$$

$$\begin{aligned} &> \text{dpsy} \left(\frac{\sqrt{4 \cdot a \cdot b + b \cdot c + 4 \cdot c \cdot a}}{b+c}, 1, \frac{9}{2}, 2 \right) \\ &7.515 \end{aligned}$$

$$\frac{1}{2} \frac{11a^2 + 14ab + 14ac - b^2 + 8bc - c^2}{a^2 + 4ab + 4ac + b^2 + 4bc + c^2} \leq \frac{\sqrt{4ab + 4ac + bc}}{b+c} \quad (17)$$

$$\begin{aligned} &> \text{dpsy} \left(\frac{a}{\sqrt{a^2 + 8 \cdot b \cdot c}}, 1, 1, 2 \right) \\ &3.984 \end{aligned}$$

$$\frac{a(5a + 2b + 2c)}{5a^2 + 4ab + 4ac + 5b^2 + 4bc + 5c^2} \leq \frac{a}{\sqrt{a^2 + 8bc}} \quad (18)$$

$$\begin{aligned} &> \text{dpsy} \left(\sqrt{1 + \frac{48 \cdot a}{b+c}}, 1, 15, 2 \right) \\ &11.172 \end{aligned}$$

$$\frac{184a^2 + 289ab + 289ac - 32b^2 + 127bc - 32c^2}{8a^2 + 47ab + 47ac + 8b^2 + 47bc + 8c^2} \leq \sqrt{1 + \frac{48a}{b+c}} \quad (19)$$

$$\begin{aligned} &> \text{dpsy} \left(\sqrt{\frac{2 \cdot (8 \cdot a^2 + b \cdot c)}{b^2 + c^2}}, 1, 9, 2 \right) \\ &48.406 \end{aligned}$$

$$\frac{47a^2 + 2ab + 2ac - b^2 + 14bc - c^2}{5a^2 + 2ab + 2ac + 5b^2 + 2bc + 5c^2} \leq \sqrt{2} \sqrt{\frac{8a^2 + bc}{b^2 + c^2}} \quad (20)$$

$$\begin{aligned} &> \text{dpsy} \left(\sqrt{\frac{a^3}{a^3 + (b+c)^3}}, 1, 1, 2 \right) \\ &40.921 \end{aligned}$$

$$\frac{a^2}{a^2 + b^2 + c^2} \leq \sqrt{\frac{a^3}{a^3 + (b+c)^3}} \quad (21)$$

$$\rightarrow \text{dpsy} \left(\frac{\text{sgm}(a^2)}{\text{sgm}(a^2) - b \cdot c}, -1, \frac{9}{2}, 1 \right)$$

3.453

$$\frac{a^2 + b^2 + c^2}{a^2 + b^2 - bc + c^2} \leq -\frac{1}{100} \left((8\sqrt{34} - 99) (72a\sqrt{34}b + 72a\sqrt{34}c + 72\sqrt{34}b^2 + 144bc\sqrt{34} + 72\sqrt{34}c^2 + 700a^2 - 484ab - 484ca + 541b^2 + 482bc + 541c^2) \right) / (72a\sqrt{34}b + 72a\sqrt{34}c + 72bc\sqrt{34} + 305a^2 - 281ab - 281ca + 305b^2 - 281bc + 305c^2) \quad (22)$$

$$\rightarrow \text{dpsy} \left(\frac{\sqrt{2 \cdot a^2 + 2 \cdot b \cdot c}}{b + c}, 1, 3, 2 \right)$$

12.109

$$\frac{1}{4} \frac{49a\sqrt{2}b + 49a\sqrt{2}c - 14bc\sqrt{2} + 12a^2 - 68ab - 68ca + 28bc}{7a\sqrt{2}b + 7a\sqrt{2}c + 7bc\sqrt{2} + a^2 - 9ab - 9ca + b^2 - 9bc + c^2} \leq \frac{\sqrt{2a^2 + 2bc}}{b + c} \quad (23)$$

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