

**31.16**

$$\begin{aligned}
 & \log(7+5\sqrt{2}) + 8\log(\sqrt{2}+1) + 7\log(\sqrt{2}-1) + 2\log(3-2\sqrt{2}) = \\
 & = \log(7+5\sqrt{2}) + \log(\sqrt{2}+1) + 7\log(\sqrt{2}+1) + 7\log(\sqrt{2}-1) + 2\log(3-2\sqrt{2}) = \\
 & \log(7+5\sqrt{2}) + \log(\sqrt{2}+1) + 7\log[(\sqrt{2}+1)(\sqrt{2}-1)] + 2\log(3-2\sqrt{2}) = \\
 & = \log(7+5\sqrt{2}) + \log(\sqrt{2}+1) + \cancel{7\log(2-1)} + 2\log(3-2\sqrt{2}) = \\
 & = \log(7+5\sqrt{2}) + \log(\sqrt{2}+1) + \log(3-2\sqrt{2})^2 = \\
 & = \log(7+5\sqrt{2}) + \log(\sqrt{2}+1) + \log(9-12\sqrt{2}+8) = \\
 & = \log(7+5\sqrt{2}) + \log(\sqrt{2}+1) + \log(17-12\sqrt{2}) = \\
 & = \log[(7+5\sqrt{2})(\sqrt{2}+1)] + \log(17-12\sqrt{2}) = \\
 & = \log(7\sqrt{2}+7+5\cdot 2+5\sqrt{2}) + \log(17-12\sqrt{2}) = \\
 & = \log(17+12\sqrt{2}) + \log(17-12\sqrt{2}) = \\
 & = \log[(17+12\sqrt{2})(17-12\sqrt{2})] = \\
 & = \log(17^2 - 12^2 \cdot 2) = \log 1 = 0
 \end{aligned}$$