

$$\begin{aligned}
 1 \text{ (v)} \quad & \frac{5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ} \\
 & = \frac{5 \times \left(\frac{1}{2}\right)^2 + 4 \times \left(\frac{2}{\sqrt{3}}\right)^2 - 1^2}{\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2} \\
 & = \frac{\frac{5}{4} + \frac{16}{3} - 1}{\frac{1}{4} + \frac{3}{4}} \\
 & = \frac{\frac{15 + 64 - 12}{12}}{\frac{4}{4}} \\
 & = \frac{67}{12}
 \end{aligned}$$

$$\begin{aligned}
 2 \text{ (i)} \quad & \frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} \\
 & = \frac{2 \times \frac{1}{\sqrt{3}}}{1 + \left(\frac{1}{\sqrt{3}}\right)^2} \\
 & = \frac{\frac{2}{\sqrt{3}}}{1 + \frac{1}{3}} \\
 & = \frac{\frac{2}{\sqrt{3}}}{\frac{4}{3}}
 \end{aligned}$$

$$= \frac{2}{\sqrt{3}} \times \frac{3}{4} \sqrt{3}$$

$$= \sin 60^\circ \text{ (A)}$$