

1.  $\sin 210^\circ + \tan \frac{\pi}{4} - \cos(-180^\circ)$

$$-\frac{1}{2} + 1 - (-1) = -\frac{1}{2} + 1 + 1 = -\frac{1}{2} + 2 = -\frac{1}{2} + \frac{4}{2} = \boxed{\frac{3}{2}}$$

2.  $(\sin(\frac{5\pi}{4}))(\sec(45^\circ) - \tan(-\pi)) + \csc 690^\circ * (\sec(45^\circ)) = \frac{1}{\sqrt{2}/2} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$

$$(-\frac{\sqrt{2}}{2})(\sqrt{2} - 0) + (-2) = -\frac{\sqrt{2}}{2} \cdot \sqrt{2} - 2 \quad ** \csc 690^\circ = \frac{1}{\sin 690^\circ} = \frac{1}{\sin 330^\circ} = \frac{1}{-1/2} = -2$$

$$= -\frac{2}{2} - 2 = -1 - 2 = \boxed{-3}$$

3.  $\csc \frac{2\pi}{3} \div \cos \frac{2\pi}{3} \rightarrow -\frac{1}{2}$

$$\frac{1}{\sin \frac{2\pi}{3}} = \frac{1}{\sqrt{3}/2} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$

$$\frac{2\sqrt{3}}{3} \div -\frac{1}{2} = \frac{2\sqrt{3}}{3} \cdot -\frac{2}{1} = \boxed{-\frac{4\sqrt{3}}{3}}$$

4.  $\cos(-\frac{13\pi}{6}) + (\cos \frac{17\pi}{4})(\cos(-240^\circ))$

$$\frac{-\frac{13\pi}{6} + \frac{12\pi}{6} - \frac{\pi}{6}}{\frac{17\pi}{4} - \frac{16\pi}{4} - \frac{\pi}{4}} \quad \cos(-\frac{\pi}{6}) + \cos(\frac{\pi}{4})$$

$$\frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} (-\frac{1}{2}) = \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{4} = \frac{2\sqrt{3}}{4} - \frac{\sqrt{2}}{4} = \boxed{\frac{2\sqrt{3} - \sqrt{2}}{4}}$$

5.  $\cot 135^\circ + (\csc 405^\circ)(\sin 120^\circ) - \sin \frac{3\pi}{2} - \sin \frac{4\pi}{3} \cdot \cos 315^\circ$

$$\frac{-\sqrt{2}/2}{\sqrt{2}/2} \quad \csc 45^\circ = \frac{1}{\sin 45^\circ} = \frac{1}{\sqrt{2}/2} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \sqrt{2}$$

$$-1 + (\sqrt{2})(\frac{\sqrt{3}}{2}) - (-1) - (-\frac{\sqrt{3}}{2})(\frac{\sqrt{2}}{2}) = -1 + \frac{\sqrt{6}}{2} + 1 + \frac{\sqrt{6}}{4} = \frac{2\sqrt{6}}{4} + \frac{\sqrt{6}}{4} = \boxed{\frac{3\sqrt{6}}{4}}$$

6.  $\tan(-150^\circ) + \csc(210^\circ)\cot(-210^\circ)$

$$\frac{-\frac{1}{2}}{-\sqrt{3}/2} = -\frac{1}{2} \cdot \frac{2}{-\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3} \quad \sin 210^\circ = -\frac{1}{2} \rightarrow -\frac{\sqrt{3}}{2} \cdot \frac{2}{1} = -\sqrt{3}$$

$$\frac{\sqrt{3}}{3} + (-2)(-\sqrt{3}) = \frac{\sqrt{3}}{3} + 2\sqrt{3} = \frac{\sqrt{3}}{3} + \frac{6\sqrt{3}}{3} = \boxed{\frac{7\sqrt{3}}{3}}$$

7.  $\cot 315^\circ \cdot \sec \frac{7\pi}{4} + \csc 330^\circ \cdot \sin \frac{3\pi}{4} - \cos \frac{5\pi}{4} \cdot \sec 0$

$$\frac{\sqrt{2}/2}{-\sqrt{2}/2} = -1 \quad \frac{1}{\cos 7\pi/4} = \frac{1}{\sqrt{2}/2} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \sqrt{2}$$

$$(-1)(\sqrt{2}) + (-2)(\frac{\sqrt{2}}{2}) - (-\frac{\sqrt{2}}{2})(1) = -\sqrt{2} - \sqrt{2} + \frac{\sqrt{2}}{2} = -2\sqrt{2} + \frac{\sqrt{2}}{2}$$

8.  $\cos(-150^\circ)(\sin 45^\circ)(\cos 3\pi) - (\csc \frac{5\pi}{6})(\sin \frac{13\pi}{4})(\sin(-\frac{2\pi}{3}))$

$$\frac{1}{\sin 5\pi/6} = \frac{1}{1/2} = 2 \quad \frac{13\pi}{4} - \frac{8\pi}{4} = \frac{5\pi}{4} \rightarrow \sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$$

$$= -\frac{4\sqrt{2}}{2} + \frac{\sqrt{2}}{2} = \boxed{-\frac{3\sqrt{2}}{2}}$$

$$(-\frac{\sqrt{3}}{2})(\frac{\sqrt{2}}{2})(-1) - 2(-\frac{\sqrt{2}}{2})(-\frac{\sqrt{3}}{2}) = \frac{\sqrt{6}}{4} - 2(\frac{\sqrt{6}}{4}) = \frac{\sqrt{6}}{4} - \frac{2\sqrt{6}}{4} = \boxed{-\frac{\sqrt{6}}{4}}$$

- Answers: 1.  $\frac{3}{2}$  2.  $-3$  3.  $-\frac{4\sqrt{3}}{3}$  4.  $\frac{2\sqrt{3}-\sqrt{2}}{4}$  5.  $\frac{3\sqrt{6}}{4}$  6.  $\frac{7\sqrt{3}}{3}$  7.  $-\frac{3\sqrt{2}}{2}$  8.  $-\frac{\sqrt{6}}{4}$

1.  $\sin 210^\circ + \tan \frac{\pi}{4} - \cos(-180^\circ)$

2.  $\left(\sin\left(\frac{5\pi}{4}\right)\right)(\sec(45^\circ) - \tan(-\pi)) + \csc 690^\circ$

3.  $\csc \frac{2\pi}{3} \div \cos \frac{2\pi}{3}$

4.  $\cos\left(-\frac{13\pi}{6}\right) + \left(\cos \frac{17\pi}{4}\right)(\cos(-240^\circ))$

5.  $\cot 135^\circ + (\csc 405^\circ)(\sin 120^\circ) - \sin \frac{3\pi}{2} - \sin \frac{4\pi}{3} \cdot \cos 315^\circ$

6.  $\tan(-150^\circ) + \csc(210^\circ)\cot(-210^\circ)$

7.  $\cot 315^\circ \cdot \sec \frac{7\pi}{4} + \csc 330^\circ \cdot \sin \frac{3\pi}{4} - \cos \frac{5\pi}{4} \cdot \sec 0$

8.  $\cos(-150^\circ)(\sin 45^\circ)(\cos 3\pi) - \left(\csc \frac{5\pi}{6}\right)\left(\sin \frac{13\pi}{4}\right)\left(\sin\left(-\frac{2\pi}{3}\right)\right)$

Answers: 1.  $\frac{3}{2}$  2.  $-3$  3.  $-\frac{4\sqrt{3}}{3}$  4.  $\frac{2\sqrt{3}-\sqrt{2}}{4}$  5.  $\frac{3\sqrt{6}}{4}$  6.  $\frac{7\sqrt{3}}{3}$  7.  $\frac{-3\sqrt{2}}{2}$  8.  $\frac{-\sqrt{6}}{4}$