MATH 11022: Trigonometric Expressions

Find the exact value of the following expressions. Be sure to simplify your answer.

1. $7\sin\frac{\pi}{2} - 5\cos\pi + 2\tan(-\pi)$
2. $\left(\sin\frac{\pi}{4}\right)\left(\cos\frac{\pi}{3}\right) + \left(\cos\frac{\pi}{4}\right)\left(\sin\frac{\pi}{3}\right)$
3. $2(\cos 135^\circ)^2 + 2(\sin 135^\circ)^2$
4. $\csc 225^\circ - \sec 315^\circ + \cos 270^\circ$
5. $\sqrt{\frac{1-\cos 120^\circ}{1+\cos 120^\circ}}$
6. $\frac{\sin 120^\circ}{1+\cos 120^\circ}$
7. $\frac{\tan 120^\circ + \tan 30^\circ}{1 - \tan 120^\circ \tan 30^\circ}$
8. $3(\sec 300^\circ)(\tan 135^\circ) + (\csc 60^\circ)^2$
9. $\cos\frac{3\pi}{4} + \sin\frac{5\pi}{3}$
10. $\frac{\sec 60^\circ \tan 30^\circ}{\sec 30^\circ \cot 30^\circ}$

ANSWERS

1. 12
2. $\frac{\sqrt{2}+\sqrt{6}}{4}$
3. 2
4. $-2\sqrt{2}$
5. $\sqrt{3}$
6. $\sqrt{3}$
7. $-\frac{\sqrt{3}}{3}$
8. $-\frac{14}{3}$
9. $\frac{-\sqrt{3}-\sqrt{2}}{2}$
10. $\frac{\sqrt{3}}{3}$