Handout for MATH 1300 (Barsamian) Lecture L36 Fri Nov 6, 2026 Assorted Trig Stuff

(1) Find the exact value of $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$.

(2) Find the exact value of $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$.

(3) Find the exact value of $\tan^{-1}\left(\tan\left(\frac{2\pi}{3}\right)\right)$.

(4) Find the exact value of $\tan(\tan^{-1}(37))$.

(5) Find the exact value of $\sin\left(\cos^{-1}\left(\frac{12}{13}\right)\right)$

(6) Rewrite $\sin(\cos^{-1}(u))$ as an algebraic expression in u.

(7) Find the exact value of

$$\frac{\left(1+\tan\left(\frac{\pi}{6}\right)\tan\left(\frac{\pi}{4}\right)\right)}{\left(\tan\left(\frac{\pi}{6}\right)-1\right)}$$

Simplify your answer. Do not leave any radicals in the denominator.

(8) Find the height of an equilateral triangle whose sides have length 5. (exact answer)

(9) Find the lengths of the sides of an equilateral triangle whose height is 5. (exact answer)

(10) A 30-60-90 triangle has shortest side of length 5. Find the lengths of the other two sides. (exact answer).

(11) A 30-60-90 triangle has hypotenuse of length 5. Find the lengths of the other two sides. (exact answer).

(12) Give a formula for a function that is a transformation of $y=\sin(x)$, transformed in a way that the transformed function has a smaller amplitude, a larger period, and a phase shift of $-\pi$. Your formula should be different from everyone else's in the class.

(13) Give a formula for a function that is a transformation of $y=\cos(x)$, transformed in a way that the transformed function has been shifted up, has a larger amplitude, a smaller period, and a phase shift of $-\pi$. Your formula should be different from everyone else's in the class.