Fill in the blanks.

(1) True or False: $\cos^2\theta = 1 - \sin^2\theta$ _____ .

(2) cos (x - y) = _____

(3) sin(θ/2) = _____

(4) Write as a product: cos(6x)-cos(2x) _____ .

(5) sin2 θ = _____

(6) Given tanα = 2/3 , α in the third quadrant, and cos θ = 12/13, $\dfrac{3\pi}{2} < \theta < 2\pi$

Find:

   a) sin (α - θ)

   b) cos(θ /2)

   c) tan (2α)

(7) Using identities, find the exact value of:
   (a) sin 108° cos 63° - cos 108° sin 63° = _____   (b) cos(-π/12) _____

(8) Solve for θ exactly (in radians, $0 \le \theta < 2\pi$).
   (a) sin θ = 0.7   (b) tan θ = -4   (c) cos θ = -5/6

(9) Simplify $\quad \sin\left(\tan^{-1}\left(\frac{-4}{3}\right) - \cos^{-1}\left(\frac{1}{5}\right)\right)$

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(10) Verify the following identity. Presentation counts.

$$\sin 2\theta = \frac{2\tan\theta}{1 + \tan^2\theta}$$

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(11) Solve for $0 \le x < 2\pi$: $\quad \sqrt{3}\tan(2x) + 1 = 0$

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(12) Find all solutions: $\quad 4\cos\left(\frac{x}{3}\right) = -4$

Find all solutions to the following equations. (7 points each)	
(14) $2\sin x - \sqrt{3} = 0$	(15) $4\cos^2 x - 2 = 0$

SOLVE the following equations: $0 \le x < 2\pi$ (8 points each)	
(16) $8 - 6\sin^2 x = 7\cos x$	(17) $\dfrac{1}{2}\cos t\,\sin(2t) = \sin t$