Pre-Cal CW 5.4-5.5 Trig Identities and Solving Trig Equations

1. Find the exact values of the sine, cosine, and tangent of the $\dfrac{17\pi}{12}$.

2. Write the following expression as the sine or cosine of an angle. Do not evaluate!
$$\cos 45^o \cos 120^o - \sin 45^o \sin 120^o$$

3. Find the exact value of trigonometric function $\tan(u+v)$ when
$$\sin u = \frac{4}{5} \ (u \text{ is in Quad I}) \quad \text{and} \ \cos v = -\frac{7}{25} \ (v \text{ is in Quad III})$$

4. Solve the following in the interval $[0, 2\pi)$:
$$\cos\left(x+\frac{\pi}{4}\right) - \cos\left(x-\frac{\pi}{4}\right) = 1$$

5. Solve the following in the interval $[0, 2\pi)$:
$$\sin 2x \sin x = \cos x$$

6. Find the exact values of $\cos 2u$ and $\tan 2u$ using the double-angle formulas.
$$\cos u = -\frac{2}{\sqrt{5}}, \quad \pi < u < \frac{3\pi}{2}$$

7. Write $\sin 4x$ in terms of $\sin x$. (Hint: you can have radicals in the final answer)