Express each of the following complex numbers using trigonometric form. Express all angles in radians in terms of π, exact value please.

1. $4 + 4\sqrt{3}\ i\ =$ _____

2. $2\sqrt{2} - 2\sqrt{2}\ i =$ _____

Express each of the following complex numbers using standard form (exact values please).

3. $10(\cos(\pi/6) + i\sin(\pi/6)) =$ _____

4. $6(\cos(4\pi/3) + i\sin(4\pi/3)) =$ _____

Perform the indicated operations. Express your answers using trigonometric form (exact values please).

5. $[7(\cos(\pi/4) + i\sin(\pi/4))][5(\cos(\pi/3) + i\sin(\pi/3))] =$ _____

6. $[10(\cos(5\pi/3) + i\sin(5\pi/3))] \div [2.5(\cos(\pi/2) + i\sin(\pi/2))] =$ _____

Find the indicated power of the given complex number. Express your answers using standard form (exact values please).

7. $(\sqrt{2} + \sqrt{2}\ i)^3 =$ _____

8. $(1 + \sqrt{3}\ i)^7 =$ _____

Find the indicated roots of the given complex number. Express all roots using standard form. Express all values rounded to 2 significant digits.

9.   **Find all fourth roots of** $-5\sqrt{2} + 5\sqrt{2}\,i$.

10. **Find all fifth roots of -32.**