Review – Angles & The Unit Circle

1. State whether each angle is positive or negative. Then describe whether the rotation is clockwise or counterclockwise.
   a) 45°
   b) −120°
   c) 225°
   d) −30°

2. Sketch each angle in standard position and identify the quadrant.
   a) 35°
   b) 120°
   c) 225°
   d) −40°

3. State the reference angle for each angle.
   a) 135°
   b) 220°
   c) 310°
   d) 150°

4. An angle has a reference angle of 40°. Determine one possible angle in:
   a) Quadrant I
   b) Quadrant II
   c) Quadrant III
   d) Quadrant IV

5. Fill in the table.

Angle	**Quadrant**	**Reference Angle**
130°		
240°		
330°		
45°		

6. Reflection and Symmetry
   a) Sketch two angles with the same sine value.
   b) Sketch two angles with opposite cosine values.
   c) Explain why sin 30° = sin 150°.

Part 2 — Exact Trig Ratios

7. Determine the exact value. Do not use a calculator.
   a) $sin\ 30°$
   b) $tan\ 45°$
   c) $cos\ 90°$
   d) $tan\ 60°$
   e) $cos\ 30°$

8. Determine the exact value using reference angles and quadrant signs. Do not use a calculator.
   a) $sin\ 150°$
   b) $cos\ 315°$
   c) $tan\ 240°$
   d) $sin\ 300°$
   e) $cos\ 135°$

9. Determine the angle(s). $0° \leq \theta \leq 360°$
   a) $sin\ \theta = \frac{1}{2}$
   b) $tan\ \theta = 1$
   c) $sin\ \theta = \frac{-\sqrt{2}}{2}$
   d) $tan\ \theta = -\sqrt{3}$

Part 3 — Unit Circle

10. Determine the sign of each trig function in each quadrant.

Quadrant	sin θ	cos θ	tan θ
I			
II			
III			
IV			

11. Determine the exact values of sin θ, cos θ, and tan θ for each coordinate. Leave answers as exact fractions.
   a) (3, 4)
   b) (−3, 4)
   c) (−5, −12)

12. Use the unit circle to determine the exact value. Do not use a calculator.
   a) sin 240°
   b) cos 300°
   c) tan 135°
   d) sin 315°
   e) cos 210°