

Precalculus Unit 3: Solving Trig. Equations
Day 5 HW: Practice Exercises

Name: _____

1. For each equation below state the number of solutions for $0 < x < 360^\circ$. Explain your answers.

(a) $\sin(39x) = 1$

(b) $\cos(3x) + 4 = 5$

(c) $-2\cos(10x) = -6$

2. Knowing that $\sin 20^\circ = 0.3420$ find all solutions to the equation $\sin(4\theta) = 0.3420$ for $0 \leq \theta < 360^\circ$.

3. Solve each equation for $0 < x < 360^\circ$.

(a) $\cos(2x) = \frac{\sqrt{3}}{2}$

(b) $\sin\left(\frac{1}{2}x\right) = -\frac{\sqrt{3}}{2}$

(c) $10\sin\left(\frac{1}{4}x\right) = 5\sqrt{2}$

(d) $10\cos(3x) = -5\sqrt{3}$

(e) $\sin(10x) + 9 = 8$

(f) $6\cos(2\theta) + 7 = 4$

4. Solve the equations for $0 < \theta < 2\pi$.

(a) $\sin(2\theta) = \frac{1}{2}$

(b) $\cos(4\theta) = -1$

5. The owl population in New Brunswick, Maine in the 21st century can be modeled by the trig. function $O(t) = 30 \cos[30(t - 3)] + 50$. In this function t is the number of years since 2000 and $O(t)$ is the number of owls (in thousands). During which time interval in the first 13 years of the century was the owl population below 35,000?