APPC Lesson 7.3 Homework
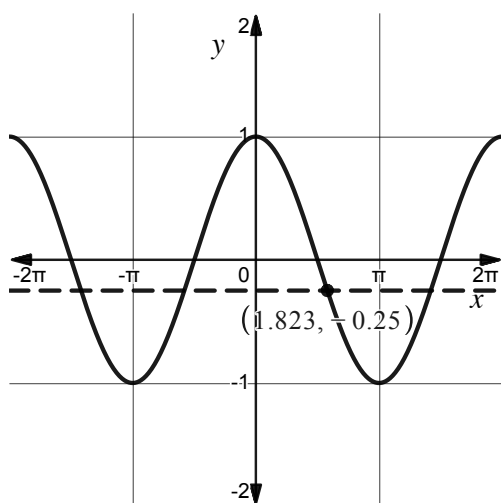
Name _____

1.   Find all solutions to $\cos\theta = -\dfrac{1}{2}$ for $0 \le \theta \le 2\pi$.

2.   Solve $-3\sin\theta + 7 = 10$ for $0 \le \theta \le 2\pi$.

3.   The graph of $y = \cos x$ is shown. The dashed line represents $y = -0.25$. An approximate solution to $\cos\theta = -0.25$ is shown on the graph. Find two additional solutions to $\cos\theta = -0.25$.

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4.   Solve $\sin x + \sqrt{2} = -\sin x$ on the interval $-\dfrac{\pi}{2} < x < \dfrac{\pi}{2}$.

⊞5.   The height of the tide in San Diego, California can be roughly modeled by the function $H(t) = 4 + 3\cos\left(\dfrac{\pi}{6}t\right)$, where $H(t)$ is the height of the water in feet, and t is the time in hours with $t = 0$ corresponding to 12 PM (noon).

a. What is the water level at high tide? At what time(s) does this occur for $0 \le t \le 24$?

b. Give all times on the interval $[0, 24]$ at which the water level is 2 feet high. Show your work.

6.   Let $k(x) = 2(\cos x)(\sin x) - \sin x$. Solve $k(x) = 0$ for values of x in the interval $[0, \pi]$.

⊞7.   Let $g(x) = \cos(1.3x + 4)$ and $h(x) = g(x) - 0.25$. On which subinterval(s) of $[-\pi, \pi]$ is $h(x) \le 0$?

8. What are all values of θ, where $0 \leq \theta \leq 2\pi$ for which $6 \sin \theta < 3$ and $8 \cos \theta < -4\sqrt{3}$?

9. Find all x-intercepts of $f(x) = 6 \sin^2 x + 3 \sin x - 3 = 0$ on the interval $[-\frac{\pi}{2}, \frac{\pi}{2}]$.