

Math 121 (Lesieutre)  
Quiz 6  
October ??, 2017

Name: \_\_\_\_\_

**Problem 1.** Find all solutions between 0 and  $2\pi$ :

$$\cos^2 \theta + 3 \cos \theta + 2 = 0$$

Let  $u = \cos \theta$ . Then we have  $u^2 + 3u + 2 = 0$ :

$$\begin{aligned}u^2 + 3u + 2 &= 0 \\(u + 1)(u + 2) &= 0 \\u &= -1 \text{ or } -2 \\ \cos \theta &= -1 \text{ or } -2\end{aligned}$$

$\cos \theta = -2$  is impossible: cosine is between  $-1$  and  $1$ .  $\cos \theta = -1$  happens for  $\theta = \pi$ , and that's the only solution in our range.