

**Worksheet II**  
**MORE PRE-CALCULUS CONCEPTS**  
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Questions and Exercises

You may not use calculators, computers, etc. No help from any person other than yourself and from any notes other than your own. You may use other books: from the library, a professor, etc. Use pencil only. All the necessary sufficient steps for a solution should be shown - further, justification for each step should be provided. If an answer does not exist write D.N.E. (Does Not Exist) and explain why it does not exist.

Let  $U = \mathbb{R}$  for problems to solve and let  $U = \mathbb{R} \times \mathbb{R}$  for problems to graph.

**1 - 4** Solve for  $\theta$  in each of the following:

1. Let  $\theta \in [0, 2\pi]$ . Solve  $2 \cos^2(\theta) - 1 = 0$ .
2. Let  $\theta \in [-2\pi, 2\pi]$ . Solve  $\tan(\theta) - 1 = 0$ .
3. Let  $\theta \in (-\pi, \pi)$ . Solve  $\cos(\theta) \cdot \sin(\theta) - 2 \cos(\theta) + \sin(\theta) = 2$ .
4. Let  $\theta \in [-2\pi, 2\pi]$ . Solve  $2 \cos(2\theta) = \sqrt{3}$ .

**5 - 7** Graph the following systematically begin with  $f(x) = \sin(x)$ ,  $f : [-2\pi, 2\pi] \rightarrow \mathbb{R}$  and 'track' the x-intercepts of  $f$  step-by-step through the systematic graphing.

5.  $f_A(x) = 3 \sin(x) - 2$
6.  $f_B(x) = -\frac{1}{2} \sin\left(x - \frac{\pi}{2}\right)$
7.  $f_C(x) = \sin\left(2x + \frac{\pi}{4}\right)$

**8 - 12** Solve for  $x$  in each of the following:

8. Solve  $2 \ln(x) - 1 = 0$ .
9. Solve  $e^x = 0$ .
10. Solve  $2 \log_3(x) - \frac{1}{9} = 0$ .
11. Solve  $e^{(4x^2-9)} = 1$ .
12. Solve  $\arctan(x) = \frac{\pi}{3}$ .
13. Evaluate  $\tan\left(\arcsin\left(\frac{3}{5}\right)\right)$ .

As with worksheet I, is there a word or phrase that is unfamiliar? Then look it up! Do not come to class with statements or excuses such as:

"I don't know what to do."

"I tried everything."<sup>1</sup>

"We didn't do this in (fill-in-the-blank of a course before Calculus)."<sup>2</sup>

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<sup>1</sup>But, did and have nothing.

<sup>2</sup>Go remediate yourself. Get out your old pre-calculus book and if you don't have it with you then find a pre-calculus book (say, in the Library) and learn the pre-calculus material.