

Instructions: This is a list of some material that is essential prerequisite for this course. That is, your instructor expects that you have a definite idea of the notions expounded below and that you be able to solve the problems below without any review. If you find yourself having trouble on some items below you should seek immediate help from your instructor or from the tutors in the Learning Laboratory.

Essential prerequisites include:

- (a) Solving quadratic equations by factoring and by the quadratic formula.
 - (b) Solving non-linear inequalities.
 - (c) Solving simple exponential and logarithmic equations.
 - (d) Solving simple trigonometric equations.
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You should be able to answer the following problems in 15 minutes.

1. Solve the equation $x^2 + x - 3 = 0$.
2. Solve the inequality $x^2 - 4 > 0$. Express your answer using interval notation.
3. Find the domain and the range of the function f given $f(x) = \sqrt{4 - 3x}$. Express your answer in interval notation. Find the inverse f^{-1} , its domain and range, and express your answer in interval notation.
4. Without using a calculator, find the exact value of
 - (a) $e^{-\log 3}$
 - (b) $\log_{10} 10000$
 - (c) $\cos 0$
 - (d) $\tan \frac{\pi}{4}$
5. Find the exact values of all the solutions to the equation $\sin x = \frac{1}{2}$ with $x \in [0; 2\pi]$.
6. Write the equation of the line with slope 3 and passing through the point $(-1, 2)$.
7. What is 36° in radian measure?