Faculty of Computers and Artificial Intelligence
Department of Mathematics
Dr. Ahmad Moursy

Math 1
Work Sheet # 1

---

1. Define the following sets: $\mathbb{N} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R}$
2. Represent $\sqrt{3}, \sqrt{10}, \sqrt{13}$ on the number line.
3. Write the following numbers as a fraction: $1.\overline{2} = 1.22222\cdots$, $0.\overline{35} = 0.353535\cdots$, $0.120\overline{23} = 0.120232323\cdots$,
4. If $-1 < x - 5 < 1$, state if the following is true or not? Justify your answer.
   (a) $4 < x < 6$
   (b) $-6 < x < -4$
   (c) $x > 4$
   (d) $x < 6$
   (e) $0 < x - 4 < 2$
   (f) $2 < \frac{x}{2} < 3$
   (g) $\frac{1}{6} < \frac{1}{x} < \frac{1}{4}$
   (h) $|x - 5| < 1$
5. Solve the following
   (a) $3(2 - x) > 2(3 + x)$
   (b) $|\frac{x}{2} - 1| = 1$
   (c) $|3x + 4| = |2x + 5|$
   (d) $|\frac{2}{x} - 4| < 3$
   (e) $12 < \frac{3}{x^2} < 27$
   (f) $(x + 3)^2 < 2$
   (g) $|4x - 2| < |x - 2|$
   (h) $|x^2 - 6x + 5| < 3$
   (i) $|x^2 - 4x + 3| > 8$
   (j) $|2x^2 - 5x + 3| > 2x^2 - 5x + 3$
   (k) $\frac{|x - 4|}{x - 1} \geq 2$