

Mata Kuliah : Matematika Terapan 1 (Teori)  
 Kode Mata Kuliah : KKT14153  
 Waktu : Kamis (07.00 – 08.40)  
 Jumlah SKS : 3 SKS  
 Nama Dosen : Eddy Bambang  
 Minggu ke : 5 (Lima)  
 Tanggal : 15-10-2015  
 Judul Materi : Pendalaman Materi Sistem Bilangan

• **Pembahasan Contoh-contoh Soal**

$$\begin{array}{lcl}
 1) & X = 2,5 & \\
 & Y = 4,5 & \\
 & & \left. \begin{array}{l} |2,5| - |4,5| \leq |2,5 - 4,5| \leq |2,5| + |4,5| \\ -2 \leq 2 \leq 7 \\ |2,5| + |4,5| = |2,5 + 4,5| \\ 7 = 7 \end{array} \right\}
 \end{array}$$

$$\begin{array}{l}
 2) \quad |2x + 3| = 2, x = ? \\
 (2x + 3)^2 = 2^2 \\
 4x^2 + 12x + 9 - 4 = 0 \\
 4x^2 + 12x + 5 = 0 \\
 4x^2 + 2x + 10x + 5 = 0 \\
 2x(2x+1) + 5(2x+1) = 0 \\
 (2x+1)(2x+5) = 0 \\
 x = -\frac{1}{2} \text{ atau } x = -\frac{5}{2}
 \end{array}$$

$$\begin{array}{l}
 3) \quad |x| + |x-1| = |x+1| \\
 (|x| + |x-1|)^2 = (|x+1|)^2 \\
 x^2 + 2(x)(x-1) + (x-1)^2 = (x+1)^2 \\
 x^2 + 2(x)(x-1) + (x-1)^2 = (x+1)^2 \\
 x^2 + 2x^2 - 2x + x^2 - 2x + 1 = x^2 + 2x + 1 \\
 4x^2 + 4x + 1 = x^2 + 2x + 1 \\
 3x^2 - 6x = 0 \\
 x^2 - 2x = 0 \\
 x(x-2) = 0 \\
 x = 0 \text{ atau } x = 2
 \end{array}$$

$$\begin{array}{l}
 4) \quad (3 + 5i)(4 - i) = \dots \\
 (3 + 5i)(4 - i) = 12 - 3i + 20i - 5i^2 \\
 = -5i^2 - 17i + 12 \\
 = -5(\sqrt{-1})^2 - 17\sqrt{-1} + 12 \\
 = 5 + 12 - 17\sqrt{-1} \\
 = 17 - 17\sqrt{-1}
 \end{array}$$

$$\begin{array}{l}
 5) \quad (2 - i)^2 (4 + 5i) = \dots \\
 (2 - i)^2 (4 + 5i) = (2 - 1)(2 - 1)(4 + 5i) \\
 = 4 - 4i + i^2 (4 + 5i)
 \end{array}$$

$$\begin{aligned}
 &= (3 - 4i)(4 + 5i) \\
 &= 12 + 15i - 16i - 20i^2 \\
 &= 12 - i - 20i^2 \\
 &= 32 - i
 \end{aligned}$$

$$\begin{aligned}
 6) \quad \frac{3+4i}{2-5i} &= \dots \\
 \frac{3+4i}{2-5i} \cdot \frac{2+5i}{2+5i} &= \frac{6+15i+8i+20i^2}{4-25i^2} \\
 &= \frac{6+23i+20i^2}{4+25} \\
 &= \frac{-14+23i}{29}
 \end{aligned}$$

$$\begin{aligned}
 7) \quad \frac{7+4i}{3-2i} &= \dots \\
 \frac{7+4i}{3-2i} \cdot \frac{3+2i}{3+2i} &= \frac{21+14i+12i+8i^2}{9-4i^2} \\
 &= \frac{21+26i-8}{9+4} \\
 &= \frac{13+26i}{13}
 \end{aligned}$$

$$\begin{aligned}
 8) \quad &\text{Tentukan nilai } x \\
 &|2x + 3| = |4x + 5| \\
 &(2x + 3)^2 = (4x + 5)^2 \\
 &4x^2 + 12x + 9 = 16x^2 + 40x + 25 \\
 &12x^2 + 28x + 16 = 0 \\
 &3x^2 + 7x + 4 = 0 \\
 &(3x + 4)(x + 1) = 0 \\
 &x = -\frac{4}{3} \text{ atau } x = -1
 \end{aligned}$$