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| Classe: Première STI2D | Date: 11/09/2015 | <u>Type</u> <u>Interrogation</u> |
| <u>Devoir n°1 sujet A</u> | | |
| Thème: Nombres complexes | | |

Mettre sous forme algébrique, en détaillant les calculs, les nombres complexes:

$$z_1 = (3+2i)^2; \quad z_2 = (1-2i)(1+5i); \quad z_3 = \frac{2+3i}{5+i}; \quad z_4 = \frac{1}{3-i}.$$

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| Classe: Première STI2D | Date: 11/09/2015 | <u>Type</u> <u>Interrogation</u> |
| <u>Devoir n°1 sujet B</u> | | |
| Thème: Nombres complexes | | |

Mettre sous forme algébrique, en détaillant les calculs, les nombres complexes:

$$z_1 = (2+3i)^2; \quad z_2 = (1-5i)(1+2i); \quad z_3 = \frac{3+2i}{5-i}; \quad z_4 = \frac{1}{3+i}.$$

Correction sujet A

$$z_1 = (3+2i)^2 = 9 + 2 \times 3 \times 2i + (2i)^2 = 9 + 12i - 4$$

$$\boxed{z_1 = 5 + 12i} \quad (1 \text{ pt})$$

$$z_2 = (1-2i)(1+5i) = 1 + 5i - 2i + 10 = 11 + 3i$$

$$\boxed{z_2 = 11 + 3i} \quad (1 \text{ pt})$$

$$z_3 = \frac{2+3i}{5+i} = \frac{(2+3i)(5-i)}{5^2+1^2} = \frac{10-2i+15i+3}{26} = \frac{13+13i}{26} = \frac{1}{2} + \frac{1}{2}i$$

$$\boxed{z_3 = \frac{1}{2} + \frac{1}{2}i} \quad (2 \text{ pts})$$

$$z_4 = \frac{1}{3-i} = \frac{3+i}{(3-i)(3+i)} = \frac{3+i}{9+1} = \frac{3}{10} + \frac{1}{10}i$$

$$\boxed{z_4 = \frac{3}{10} + \frac{1}{10}i} \quad (2 \text{ pts})$$

Correction sujet B

$$z_1 = (2+3i)^2 = 4 + 2 \times 2 \times 3i + (3i)^2 = 4 + 12i - 9 = -5 + 12i \quad \boxed{z_1 = -5 + 12i} \quad (1 \text{ pt})$$

$$z_2 = (1-5i)(1+2i) = 1 + 2i - 5i - 10i^2 = 1 - 3i + 10 = 11 - 3i \quad \boxed{z_2 = 11 - 3i} \quad (1 \text{ pt})$$

$$z_3 = \frac{3+2i}{5-i} = \frac{(3+2i)(5+i)}{(5-i)(5+i)} = \frac{15+3i+10i-2}{5^2+1^2} = \frac{13+13i}{26} = \frac{13}{26} + \frac{13}{26}i$$

$$\boxed{z_3 = \frac{1}{2} + \frac{1}{2}i} \quad (2 \text{ pts})$$

$$z_4 = \frac{1}{3+i} = \frac{3-i}{(3+i)(3-i)} = \frac{3-i}{9+1} = \frac{3-i}{10} = \frac{3}{10} - \frac{1}{10}i$$

$$\boxed{z_4 = \frac{3}{10} - \frac{1}{10}i} \quad (2 \text{ pts})$$