

複素数5（分数の和と差・分母が共役） その1

$$(1) \quad \frac{-1+2i}{1+i} + \frac{5+6i}{1-i} = \frac{(-1+2i)(1-i) + (5+6i)(1+i)}{1^2+1^2} =$$

$$(2) \quad \frac{7+8i}{1-i} - \frac{7+3i}{1+i} = \frac{(7+8i)(1+i) - (7+3i)(1-i)}{1^2+(-1)^2} =$$

$$(3) \quad \frac{3+2i}{1-5i} + \frac{8-3i}{1+5i}$$

$$(4) \quad \frac{-7-i}{3+i} - \frac{1+2i}{3-i}$$

$$(5) \quad \frac{-2+7i}{2-i} + \frac{7+3i}{2+i}$$

$$(6) \quad \frac{1+3i}{7+i} + \frac{1+3i}{7-i}$$

$$(7) \quad \frac{2+i}{1-3i} - \frac{3+2i}{1+3i}$$

複素数5（分数の和と差・分母が共役） その2

$$(1) \quad \frac{4+9i}{3-2i} + \frac{1-i}{3+2i} = \frac{(4+9i)(3+2i) + (1-i)(3-2i)}{3^2 + (-2)^2} =$$

$$(2) \quad \frac{-3+2i}{2+i} - \frac{3+i}{2-i} = \frac{(-3+2i)(2-i) - (3+i)(2+i)}{2^2 + 1^2} =$$

$$(3) \quad \frac{-7-5i}{1+i} + \frac{3-5i}{1-i}$$

$$(4) \quad \frac{1-i}{2-i} + \frac{4-3i}{2+i}$$

$$(5) \quad \frac{7-9i}{1+i} + \frac{1-2i}{1-i}$$

$$(6) \quad \frac{3-4i}{5+3i} + \frac{4-3i}{5-3i}$$

$$(7) \quad \frac{-6+i}{3-5i} - \frac{1+2i}{3+5i}$$

複素数5（分数の和と差・分母が共役） その3

$$(1) \quad \frac{-4-i}{1+i} + \frac{4+9i}{1-i} = \frac{(-4-i)(1-i) + (4+9i)(1+i)}{1^2 + 1^2} =$$

$$(2) \quad \frac{-5+7i}{1+2i} - \frac{-8+7i}{1-2i} = \frac{(-5+7i)(1-2i) - (-8+7i)(1+2i)}{1^2 + 2^2} =$$

$$(3) \quad \frac{9+8i}{2+3i} - \frac{3-8i}{2-3i}$$

$$(4) \quad \frac{-2-3i}{3+5i} + \frac{4-3i}{3-5i}$$

$$(5) \quad \frac{-8-5i}{1-i} - \frac{9+5i}{1+i}$$

$$(6) \quad \frac{2-i}{7-i} - \frac{2-i}{7+i}$$

$$(7) \quad \frac{4+9i}{1+i} - \frac{4+i}{1-i}$$

複素数 5（分数の和と差・分母が共役） その 4

$$(1) \quad \frac{3+7i}{3-i} + \frac{-1-i}{3+i} = \frac{(3+7i)(3+i) + (-1-i)(3-i)}{3^2 + (-1)^2} =$$

$$(2) \quad \frac{-4-i}{3-7i} - \frac{-1+2i}{3+7i} = \frac{(-4-i)(3+7i) - (-1+2i)(3-7i)}{3^2 + (-7)^2} =$$

$$(3) \quad \frac{2+i}{9+2i} + \frac{7-i}{9-2i}$$

$$(4) \quad \frac{1+6i}{1-i} + \frac{8+i}{1+i}$$

$$(5) \quad \frac{5+4i}{4+i} - \frac{3-i}{4-i}$$

$$(6) \quad \frac{-4+3i}{3-i} + \frac{3-2i}{3+i}$$

$$(7) \quad \frac{-2-3i}{5-3i} - \frac{7-6i}{5+3i}$$

複素数 5（分数の和と差・分母が共役） その 5

$$(1) \quad \frac{7+9i}{1+7i} + \frac{1+3i}{1-7i} = \frac{(7+9i)(1-7i) + (1+3i)(1+7i)}{1^2 + 7^2} =$$

$$(2) \quad \frac{2-7i}{1+2i} - \frac{-2-i}{1-2i} = \frac{(2-7i)(1-2i) - (-2-i)(1+2i)}{1^2 + 2^2} =$$

$$(3) \quad \frac{-3-i}{1-i} - \frac{1+3i}{1+i}$$

$$(4) \quad \frac{-1+2i}{2-3i} - \frac{3-2i}{2+3i}$$

$$(5) \quad \frac{-7+5i}{3-2i} - \frac{6+5i}{3+2i}$$

$$(6) \quad \frac{9-5i}{1-5i} - \frac{1+i}{1+5i}$$

$$(7) \quad \frac{-3-2i}{3+5i} + \frac{5+6i}{3-5i}$$

複素数5（分数の和と差・分母が共役） その6

$$(1) \quad \frac{5-3i}{2-i} + \frac{6+5i}{2+i} = \frac{(5-3i)(2+i) + (6+5i)(2-i)}{2^2 + (-1)^2} =$$

$$(2) \quad \frac{7+i}{2+3i} - \frac{2+3i}{2-3i} = \frac{(7+i)(2-3i) - (2+3i)(2+3i)}{2^2 + 3^2} =$$

$$(3) \quad \frac{4-i}{1-i} + \frac{3+4i}{1+i}$$

$$(4) \quad \frac{1-3i}{4+3i} + \frac{4+7i}{4-3i}$$

$$(5) \quad \frac{3-i}{1-3i} - \frac{3+8i}{1+3i}$$

$$(6) \quad \frac{1-8i}{1-i} - \frac{1+2i}{1+i}$$

$$(7) \quad \frac{-7+9i}{7-4i} - \frac{9+8i}{7+4i}$$

複素数5（分数の和と差・分母が共役） その7

$$(1) \quad \frac{-3-i}{4+3i} + \frac{9+8i}{4-3i} = \frac{(-3-i)(4-3i) + (9+8i)(4+3i)}{4^2 + 3^2} =$$

$$(2) \quad \frac{-1-i}{3-7i} - \frac{3+5i}{3+7i} = \frac{(-1-i)(3+7i) - (3+5i)(3-7i)}{3^2 + (-7)^2} =$$

$$(3) \quad \frac{-1-3i}{3+4i} - \frac{4+3i}{3-4i}$$

$$(4) \quad \frac{8+9i}{1+i} - \frac{3+2i}{1-i}$$

$$(5) \quad \frac{-1-i}{3-i} - \frac{1-i}{3+i}$$

$$(6) \quad \frac{-3+4i}{3+i} - \frac{3+2i}{3-i}$$

$$(7) \quad \frac{-1+i}{7-i} + \frac{7-9i}{7+i}$$

複素数5（分数の和と差・分母が共役） その8

$$(1) \quad \frac{-1-4i}{5+2i} + \frac{-5+2i}{5-2i} = \frac{(-1-4i)(5-2i) + (-5+2i)(5+2i)}{5^2+2^2} =$$

$$(2) \quad \frac{8+9i}{1-i} - \frac{-1+3i}{1+i} = \frac{(8+9i)(1+i) - (-1+3i)(1-i)}{1^2+(-1)^2} =$$

$$(3) \quad \frac{2+i}{5-3i} - \frac{7-8i}{5+3i}$$

$$(4) \quad \frac{1-4i}{1-2i} + \frac{1-i}{1+2i}$$

$$(5) \quad \frac{-1+6i}{2+i} - \frac{9+7i}{2-i}$$

$$(6) \quad \frac{2-3i}{1+i} + \frac{4+5i}{1-i}$$

$$(7) \quad \frac{-3-2i}{7-3i} - \frac{1-2i}{7+3i}$$

複素数5（分数の和と差・分母が共役） その9

$$(1) \quad \frac{3+7i}{3-2i} + \frac{2+i}{3+2i} = \frac{(3+7i)(3+2i) + (2+i)(3-2i)}{3^2 + (-2)^2} =$$

$$(2) \quad \frac{1-i}{5-2i} - \frac{-5+2i}{5+2i} = \frac{(1-i)(5+2i) - (-5+2i)(5-2i)}{5^2 + (-2)^2} =$$

$$(3) \quad \frac{-4+3i}{1-i} - \frac{2-i}{1+i}$$

$$(4) \quad \frac{7+i}{2+i} - \frac{1-5i}{2-i}$$

$$(5) \quad \frac{-7-i}{1-i} - \frac{3-8i}{1+i}$$

$$(6) \quad \frac{-5-4i}{1-i} + \frac{2+i}{1+i}$$

$$(7) \quad \frac{2-i}{7+3i} - \frac{4-7i}{7-3i}$$