第21回 答え

1. $\alpha = k\beta$

$$3 + i = k(x - 3i)$$

$$3 + i = k \cdot x - 3ki$$

$$\therefore k = -\frac{1}{3},\quad \underline{x = -9}$$

$$\alpha = l\gamma$$

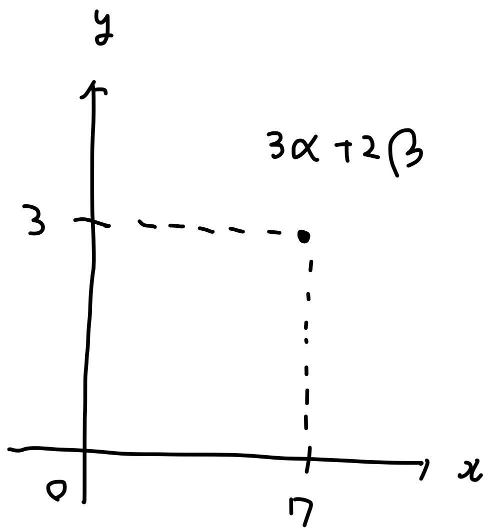
$$3 + i = 2l + l \cdot y\, i$$

$$\therefore l = \frac{3}{2},\quad \underline{y = \frac{2}{3}}$$

2. $3\alpha + 2\beta$

$$= 3(1 - i) + 2(2 + 3i)$$

$$= 7 + 3i$$



3。 実：$3+2i$

原：$-3+2i$

虚：$-3-2i$

4。 (1) 5

(2) $\dfrac{1+3i}{2-i} = \dfrac{1}{5}(1+3i)(2+i)$

$= \dfrac{1}{5}(-1+7i)$

$\therefore \left|\dfrac{1+3i}{2-i}\right| = \dfrac{1}{5}\sqrt{1+49}$

$= \sqrt{2}$ //

5。 $|\alpha-\beta| = |2+3i-1+2i|$

$= |1+5i|$

$= \sqrt{26}$ //

6. (1) $3+\sqrt{3}i$

$= \sqrt{3}(\sqrt{3}+i)$

$= 2\sqrt{3}\left(\cos\frac{\pi}{6}+i\sin\frac{\pi}{6}\right)$ //

(2) $3\left(\cos\frac{\pi}{2}+i\sin\frac{\pi}{2}\right)$

7. $\alpha = 4\left(\cos\frac{\pi}{3}+i\sin\frac{\pi}{3}\right)$

$\beta = \sqrt{2}\left(\cos\frac{\pi}{4}+i\sin\frac{\pi}{4}\right)$

なので,

$\alpha\beta = 4\sqrt{2}\left(\cos\frac{7}{12}\pi+i\sin\frac{7}{12}\pi\right)$

$\frac{\alpha}{\beta} = 2\sqrt{2}\left(\cos\frac{\pi}{12}+i\sin\frac{\pi}{12}\right)$ //

8.

$$|1+2\sqrt{2}i|$$

$$= \sqrt{1+8}$$

$$= 3$$

$$|4-3i|$$

$$= 5$$

(1) $|\alpha\beta^2| = 75$ //

(2) $\left|\dfrac{\beta^2}{\alpha^3}\right| = \dfrac{25}{27}$ //

9.

$$(\sqrt{3}+i)\frac{1}{\sqrt{2}}(1+i)$$

$$= \frac{1}{\sqrt{2}}\left\{\sqrt{3}-1+i(\sqrt{3}+1)\right\}$$ //