

1129. 11. 6 訂正

次の計算をなさい。

(1) $\{(2\sqrt{502}+3\sqrt{223})^3+(2\sqrt{502}-3\sqrt{223})^3\}^2-\{(2\sqrt{502}+3\sqrt{223})^3-(2\sqrt{502}-3\sqrt{223})^3\}^2$ [灘]

$2\sqrt{502}+3\sqrt{223}=a, 2\sqrt{502}-3\sqrt{223}=b$ とおくと

与式 = $(a^3+b^3)^2-(a^3-b^3)^2$

= $4a^3b^3$

= $4(ab)^3$ $\because ab = (2\sqrt{502}+3\sqrt{223})(2\sqrt{502}-3\sqrt{223})$

= $2008-2007$

= 1

$\therefore 4$

(2) $\frac{(-3)^{29}-3^{27}}{(\sqrt{3})^{50}}$

[慶応義塾]

与式 = $\frac{(-3)^{27}\{(-3)^2+1\}}{(3)^{25}}$

= $\frac{(-3)^{-1} \times (-3)^{27} \times \{(-3)^2+1\}}{(3)^{25}}$

= $-1 \times (-3)^2 \times \{(-3)^2+1\}$

= $-1 \times 9 \times 10$

= -90

(3) $(\sqrt{2}-\sqrt{3}-\sqrt{5}+\sqrt{6})(\sqrt{2}-\sqrt{3}+\sqrt{5}-\sqrt{6})$

[慶応義塾]

与式 = $\left\{\frac{(\sqrt{2}-\sqrt{3})}{A}-\frac{(\sqrt{5}-\sqrt{6})}{B}\right\}\left\{\frac{(\sqrt{2}-\sqrt{3})}{A}+\frac{(\sqrt{5}-\sqrt{6})}{B}\right\}$

= $(A-B)(A+B)$

= A^2-B^2

= $(\sqrt{2}-\sqrt{3})^2-(\sqrt{5}-\sqrt{6})^2$

= $5-2\sqrt{6}-(11-2\sqrt{30})$

= $-6-2\sqrt{6}+2\sqrt{30}$