

59(7)

$x = \frac{2}{\sqrt{3}+1}, y = \frac{2}{\sqrt{3}-1}$ のとき、次の式の値を求めよ。

(1) $x + y$	$x = \frac{2(\sqrt{3}-1)}{(\sqrt{3}+1)(\sqrt{3}-1)}$
(2) xy	
(3) $x^2 + y^2$	$= \frac{2(\sqrt{3}-1)}{2} = \sqrt{3}-1$
(4) $x^2y + xy^2$	$y = \frac{2(\sqrt{3}+1)}{(\sqrt{3}-1)(\sqrt{3}+1)}$
(5) $x^3 + y^3$	
(6) $x + \frac{1}{x}$	$= \frac{2(\sqrt{3}+1)}{2} = \sqrt{3}+1$

(1) $x+y = (\sqrt{3}-1) + (\sqrt{3}+1) = \underline{2\sqrt{3}}$

(2) $xy = (\sqrt{3}-1)(\sqrt{3}+1) = 3-1 = \underline{2}$

(3) $x^2+y^2 = (x+y)^2 - 2xy$
 $= (2\sqrt{3})^2 - 2 \cdot 2 = 12 - 4 = \underline{8}$

(4) $x^2y + xy^2 = xy(x+y) = 2 \cdot 2\sqrt{3} = \underline{4\sqrt{3}}$

(5) $x^3 + y^3 = (x+y)(x^2 - xy + y^2)$	$x^3 + y^3 = (x+y)^3 - 3xy(x+y)$
$= 2\sqrt{3} \cdot (8 - 2)$	$= (2\sqrt{3})^3 - 3 \cdot 2 \cdot 2\sqrt{3}$
$= \underline{12\sqrt{3}}$	$= 24\sqrt{3} - 12\sqrt{3}$
	$= \underline{12\sqrt{3}}$

(6) $\sqrt{3}-1 + \frac{\sqrt{3}+1}{2} = \frac{2\sqrt{3}-2+\sqrt{3}+1}{2}$
 $= \frac{3\sqrt{3}-1}{2}$

point $\frac{1}{x}$ 17 $x = \frac{2}{\sqrt{3}+1}$ の逆数 $\frac{1}{1}$