

1 .

(1) 20

(2) $\frac{1}{3}$

(3) $x=27$ 最小値 54

(4) 2

(5) $\frac{4}{9}$

(6) $\frac{41}{216}$

(7) $a=6$ $b=1$ $c=3$

(8) $\frac{81}{220}$

(9) -8

(10) 36

2 .

(1) $s=2$ のとき $x^2+4(y-1)^2=1$

(2) $S=2+\frac{\pi}{2}$

(3) $V=6\pi+\frac{3}{2}\pi^2$

3 .

(1) $f(u)=u^4-2u^3+u^2-\frac{1}{30}$

(2) $\sum_{k=1}^n k^4 = \frac{n(n+1)(2n+1)(3n^2+3n-1)}{30}$

(3) $\sum_{k=1}^n \left(\frac{2k-1}{2}\right)^4 = \frac{n(4n^2-1)(12n^2-7)}{240}$