1. 순환소수 $0.\dot{3}$ 와 $0.0\dot{2}$ 의 합을 $0.a\dot{b}$ 라고 할 때, $0.\dot{b}-0.0\dot{a}$ 를 순환소수로 나타낸 것은?

① $0.4\dot{8}$ ② $0.5\dot{2}$ ③ $0.5\dot{6}$ ④ $0.6\dot{0}$ ⑤ $0.6\dot{4}$

해설

$0.\dot{3}+0.0\dot{2}=\frac{3}{9}+\frac{2}{90}=0.3\dot{5}$ $\therefore\ a=3,\ b=5$

$0.\dot{b}-0.0\dot{a}=0.\dot{5}-0.0\dot{3}=\frac{5}{9}-\frac{3}{90}=\frac{47}{90}=0.5\dot{2}$

2. $xyz \neq 0$, $xy = a$, $yz = b$, $zx = c$일 때, $x^2 + y^2 + z^2$의 값을 a, b, c에 관하여 바르게 나타낸 것은?

① $\dfrac{bc}{c} + \dfrac{ac}{a} + \dfrac{ab}{b}$　② $\dfrac{bc}{b} + \dfrac{ac}{c} + \dfrac{ab}{a}$　③ $\dfrac{bc}{c} + \dfrac{ac}{b} + \dfrac{ab}{a}$

④ $\dfrac{bc}{b} + \dfrac{ac}{a} + \dfrac{ab}{c}$　⑤ $\dfrac{bc}{a} + \dfrac{ac}{b} + \dfrac{ab}{c}$

해설

$x^2y^2z^2 = abc$이고

$$x^2 = \frac{abc}{y^2z^2} = \frac{abc}{b^2} = \frac{ac}{b}$$

$$y^2 = \frac{abc}{x^2z^2} = \frac{abc}{c^2} = \frac{ab}{c}$$

$$z^2 = \frac{abc}{x^2y^2} = \frac{abc}{a^2} = \frac{bc}{a}$$

$$\therefore\ x^2 + y^2 + z^2 = \frac{ac}{b} + \frac{ab}{c} + \frac{bc}{a}$$