حل الفرض 01 على 4

التمرين الأول

$A = \dfrac{3-6\sqrt{2}}{5-10\sqrt{2}} = \dfrac{3(1-2\sqrt{2})}{5(1-2\sqrt{2})}$

$A = \dfrac{3}{5} \in \mathbb{D}$

$B = -2\sqrt{8} + \dfrac{14}{1+\sqrt{8}}$

$= \dfrac{-2\sqrt{8}(1+\sqrt{8}) + 14}{1+\sqrt{8}}$

$= \dfrac{-2\sqrt{8} - 2\times 8 + 14}{1+\sqrt{8}}$

$= \dfrac{-2\sqrt{8} - 16 + 14}{1+\sqrt{8}}$

$= \dfrac{-2\sqrt{8} - 2}{1+\sqrt{8}} = \dfrac{-2(\sqrt{8}+1)}{(1+\sqrt{8})}$

$B = -2 \in \mathbb{Z}$

$C = \dfrac{2\sqrt{18} - 2\sqrt{8}}{3\sqrt{2}}$

$= \dfrac{2\sqrt{3^2\times 2} - 2\sqrt{2^2\times 2}}{3\sqrt{2}}$

$= \dfrac{2\times 3\sqrt{2} - 2\times 2\sqrt{2}}{3\sqrt{2}}$

$= \dfrac{6\sqrt{2} - 4\sqrt{2}}{3\sqrt{2}}$

$C = \dfrac{2\sqrt{2}}{3\sqrt{2}}$ $\quad C = \dfrac{2}{3} \in \mathbb{Q}$

لدينا $a = 2,090909090\ldots$

طريقة 1

$a = 2,090909$

$a = 2 + 0,090909$

نضع $x = 0,090909$

$a = 2 + x$

عدد أرقام دور هو 2 و منه

$10^2 x = 0,090909\ldots \times 10^2$

$100x = 9,090909$

$100x = 9 + 0,090909\ldots$

$100x = 9 + x$

$100x - x = 9$

$99x = 9$

$x = \dfrac{9}{99}$

نعوض x في عبارة a

$a = 2 + \dfrac{9}{99}$

$= \dfrac{207:9}{99:9} = \boxed{\dfrac{23}{11}}$

طريقة 2: $a = 2,090909090\ldots$

لدينا الرقم 1 عدد أرقام دوره فاصلة هو a

$10a = 20,909090\ldots$

$10a = 20 + 0,909090\ldots$

نفترض $x = 0,909090\ldots$

$10a = 20 + x$

لدينا عدد أرقام الدور هو 2

$100x = 90,909090$

$100x = 90 + \underbrace{0,909090\ldots}_{x}$

$100x = 90 + x$

$100x - x = 90$

$99x = 90$

$x = \dfrac{90}{99}$

$10a = 20 + \dfrac{90}{99}$ نعوض x في a

$10a = \dfrac{2070}{99} \Rightarrow a = \dfrac{2070:9}{990:9} = \dfrac{23}{11}$