

7 (vi) let $x = 0.\overline{134}$
 Mul. both sides by 10
 $10x = 1.\overline{34} \dots$ (i)
 Mul. both sides by 100
 $1000x = 134.\overline{34} \dots$ (ii)
 (ii) - (i)
 $1000x - 10x = 134.\overline{34} - 1.\overline{34}$
 $\Rightarrow 990x = 133$
 $\Rightarrow x = \frac{133}{990}$

7 (viii) let $x = 0.404040\dots$
 $\Rightarrow x = 0.\overline{40} \dots$ (i)
 Mul. both sides by 100
 $100x = 40.\overline{40} \dots$ (ii)
 (ii) - (i)
 $100x - x = 40.\overline{40} - 0.\overline{40}$
 $\Rightarrow 99x = 40$
 $\Rightarrow x = \frac{40}{99}$

7 (vii) let $x = 0.00\overline{32}3232\dots$
 $\Rightarrow x = 0.00\overline{32}$
 Mul. both sides by 100
 $\Rightarrow 100x = 0.\overline{32} \dots$ (i)
 Mul. both sides by 100
 $10000x = 32.\overline{32} \dots$ (ii)
 (ii) - (i)
 $10000x - 100x = 32.\overline{32} - 0.\overline{32}$
 $\Rightarrow 9900x = 32$

$$\Rightarrow x = \frac{32 \cdot 8}{9900} = \frac{2475}{9900}$$

$$\Rightarrow x = \frac{8}{2475}$$

8 let $x = 0.142857142857\dots$
 $\Rightarrow x = 0.\overline{142857} \dots$ (i)
 Mul both sides by 1000000
 $\Rightarrow 1000000x = 142857.\overline{142857} \dots$ (ii)
 (ii) - (i)

$$1000000x - x = 142857.\overline{142857} - 0.\overline{142857}$$

$$\Rightarrow 999999x = 142857$$

$$\Rightarrow x = \frac{142857}{999999} = \frac{1}{7}$$

$$\therefore 0.142857142857\dots = \frac{1}{7}$$