Recurring Decimal Proof

Which if the following fractions is equivalent to a recurring decimal?

(a) $\frac{7}{10}$ (b) $\frac{7}{9}$ (c) $\frac{7}{100}$

(d) $\frac{7}{11}$ (e) $\frac{7}{20}$ (f) $\frac{7}{30}$

(b) $\frac{7}{9}$ (d) $\frac{7}{11}$ and (f) $\frac{7}{30}$

Using an algebraic method, write the following recurring decimals as a fraction.

(a) $0.\dot{4}$ (b) $0.\dot{8}$

(c) $0.\dot{1}\dot{3}$ (d) $0.\dot{4}\dot{5}$

(e) $0.\dot{5}\dot{7}$ (f) $0.\dot{4}1\dot{2}$

(g) $0.\dot{1}2\dot{7}$ (h) $0.\dot{6}7\dot{5}$

(a) $0.\dot{4} = \frac{4}{9}$ (b) $0.\dot{8} = \frac{8}{9}$

(c) $0.\dot{1}\dot{3} = \frac{13}{99}$ (d) $0.\dot{4}\dot{5} = \frac{5}{11}$

(e) $0.\dot{5}\dot{7} = \frac{19}{33}$ (f) $0.\dot{4}1\dot{2} = \frac{412}{999}$

(g) $0.\dot{1}2\dot{7} = \frac{127}{999}$ (h) $0.\dot{6}7\dot{5} = \frac{25}{37}$

Using an algebraic method, write the following recurring decimals as a fraction.

(a) $0.0\dot{4}$ (b) $0.0\dot{6}$

(c) $0.2\dot{3}$ (d) $0.1\dot{6}$

(e) $0.2\dot{1}\dot{7}$ (f) $0.00\dot{4}\dot{5}$

(g) $0.0\dot{1}5\dot{5}$ (h) $0.3\dot{6}9\dot{5}$

(a) $0.0\dot{4} = \frac{2}{45}$ (b) $0.0\dot{6} = \frac{1}{15}$

(c) $0.2\dot{3} = \frac{7}{30}$ (d) $0.1\dot{6} = \frac{1}{6}$

(e) $0.2\dot{1}\dot{7} = \frac{43}{198}$ (f) $0.00\dot{4}\dot{5} = \frac{1}{220}$

(g) $0.0\dot{1}5\dot{5} = \frac{31}{1998}$ (h) $0.3\dot{6}9\dot{5} = \frac{1846}{4995}$

Use an algebraic method to show that:

(a) $0.\dot{1}\dot{5} = \frac{5}{33}$

(b) $0.\dot{1}4\dot{4} = \frac{16}{111}$

(c) $0.7\dot{1} = \frac{32}{45}$

(a) $x = 0.\dot{1}\dot{5}$

$100x = 15.\dot{1}\dot{5}$

$99x = 15$

$x = \frac{15}{99}$

$x = \frac{5}{33}$

(b) $x = 0.\dot{1}4\dot{4}$

$1000x = 144.\dot{1}4\dot{4}$

$999x = 144$

$x = \frac{144}{999}$

$x = \frac{16}{111}$

(c) $x = 0.7\dot{1}$

$10x = 7.\dot{1}$

$100x = 71.\dot{1}$

$90x = 64$

$x = \frac{64}{90}$

$x = \frac{32}{45}$

Using an algebraic method, find $0.\dot{9}$ as a fraction.

$x = 0.\dot{9}$

$10x = 9.\dot{9}$

$9x = 9$

$x = \frac{9}{9}$

$x = 1$