Recurring decimals and surds

(2005-1)

22 Express $0.\dot{8}\dot{3}$ as a fraction.

$x = 0.838383....$

$100x = 83.838383$

$99x = 83$

$x = 83/99$

(2006-1)

22 Express $0.7\dot{2}$ as a fraction [2]

$x = 0.72222$

$10x = 7.2222$

$100x = 72.2222$

$90x = 65$

$x = 65/90$

$= 13/18$

26 Expand $(8+\sqrt{5})(3+\sqrt{5})$, simplifying your answer and stating whether it is rational or irrational. [2]

$24 + 3\sqrt{5} + 8\sqrt{5} + \sqrt{25}$

$24 + 11\sqrt{5} + 5$

$29 + 11\sqrt{5}$ Irrational

(2007-1)

22 a) Expand $(7+2\sqrt{3})^2$. Simplify your answer. [2]

$(7+2\sqrt{3})(7+2\sqrt{3})$

$49 + 14\sqrt{3} + 14\sqrt{3} + 4\sqrt{9} = 49 + 28\sqrt{3} + 12$

$= 61 + 28\sqrt{3}$

3

b) Express $0.5\dot{2}\dot{7}$ as a fraction. [2]

$x = 0.5272727$

$10x = 5.272727$

$1000x = 527.272727$

$990x = 522$

$x = 522/990$

(2008-1)

25 Given that $d = \sqrt{32}$, $e = \sqrt{8}$ and $f = \sqrt{2}$ simplify **each** of the following. State whether your answer is rational or irrational.

a) $\frac{d}{e} = \frac{\sqrt{32}}{\sqrt{8}} = \sqrt{4}$

$= 2.$

Rational

b) df $\sqrt{32} \times \sqrt{2} = \sqrt{64} = 8$

Rational

Same

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$x = 0.838383$

$100x = 83.8383$

$99x = 83$

$x = 83/99$

(2006-1)

22 Express $0.7\dot{2}$ as a fraction [2]

$x = 0.722222$

$10x = 7.2222$

$100x = 72.2222$

$90x = 65$

$x = 65/90 = 13/18$

26 Expand $(8+\sqrt{5})(3+\sqrt{5})$, simplifying your answer and stating whether it is rational or irrational. [2]

(2007-1)

22 a) Expand $(7+2\sqrt{3})^2$. Simplify your answer. [2]

b) Express $0.5\dot{2}\dot{7}$ as a fraction. [2]

(2008-1)

25 Given that $d = \sqrt{32}$, $e = \sqrt{8}$ and $f = \sqrt{2}$ simplify **each** of the following. State whether your answer is rational or irrational.

a) $\frac{d}{e}$

b) df