

## STEP III, 2008 Q1

- 1 Find all values of  $a$ ,  $b$ ,  $x$  and  $y$  that satisfy the simultaneous equations

$$\begin{aligned}a + b &= 1 \\ax + by &= \frac{1}{3} \\ax^2 + by^2 &= \frac{1}{5} \\ax^3 + by^3 &= \frac{1}{7}.\end{aligned}$$

[ **Hint:** you may wish to start by multiplying the second equation by  $x + y$ . ]



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