

June 7th

Find a fraction which is increased fourfold when 5 is added to the number and to the denominator.

This is equivalent to

$$4 \times \frac{a}{b} = \frac{a+5}{b+5}$$

Hence

$$4a(b+5) = b(a+5)$$

Rearranging gives:

$$3ab + 20a = 5b$$

Hence

$$a = \frac{5b}{3b+20}$$

So we look for integer solutions:

b=10 gives a=1

So one such fraction is $\frac{1}{10}$ (which becomes $\frac{6}{15} = \frac{2}{5}$)