

Integer Answer Type Question

Let a, b, c be positive integers such that b/a is an integer. If a, b, c are in geometric progression and the arithmetic mean of a, b, c is $b + 2$, then the value of $(a^2 + a - 14)/(a + 1)$ is

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SOLUTION :

a, b, c are in G.P.

Let, $b = ar$, $c = ar^2$, r is common ratio

$$\frac{b}{a} = r = \text{integer}$$

AM of a, b, c is $b + 2$

$$\Rightarrow \frac{a + b + c}{3} = b + 2$$

$$a + b + c = 3b + 6$$

$$a + c = 2b + 6$$

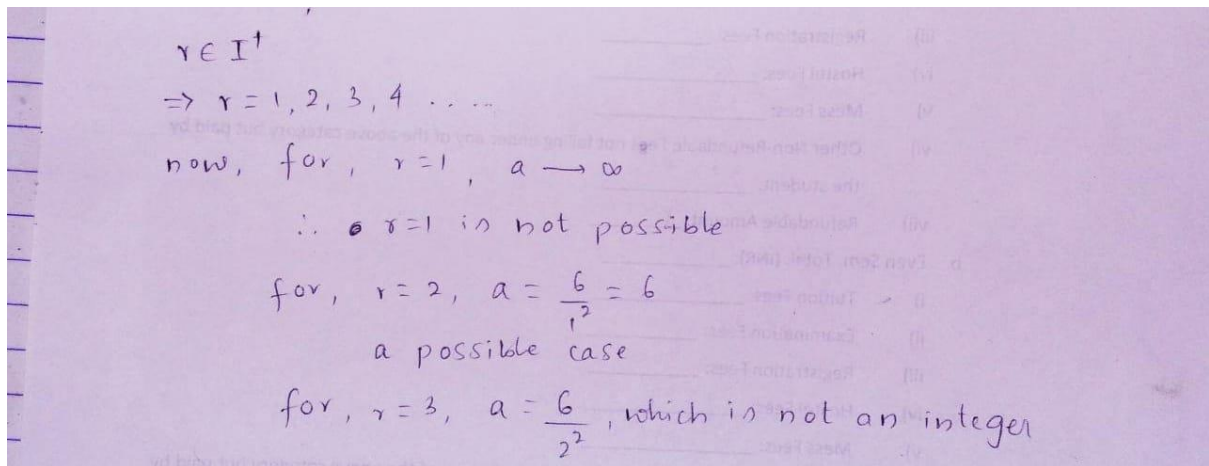
$$a + ar^2 = 2ar + 6$$

$$ar^2 - 2ar + a = 6$$

$$a(r^2 - 2r + 1) = 6$$

$$a(r-1)^2 = 6$$

$$a = \frac{6}{(r-1)^2}$$



If we go on increasing the value of r then the denominator will be increasing and will be greater than numerator which does not yield any integer value of a
Therefore $a=6$ and $r=2$ is the only possible case

