

$$a_1 + a_2 + a_3 = 21$$

$$(aq)^3 = 64 \Rightarrow aq = 4 \Rightarrow a = \frac{4}{q}$$

$$a_1 \cdot a_2 \cdot a_3 = 64 \Rightarrow a \cdot aq \cdot aq^2$$

$$4(1+q+q^2) = 21q \Rightarrow 4q^2 - 17q + 4 = 0 \Rightarrow q = \frac{17 \pm \sqrt{189 - 64}}{8} = \frac{17 \pm 15}{8}$$

$$q = 4 \text{ یا } q = \frac{1}{4}$$

$$a_1 = n^2 + 4 \quad a_2 = 2n \quad a_3 = n^2 - 2 \quad (2n)^2 = (n^2 + 4)(n^2 - 2)$$

$$(2n)^2 - (n^2 + 4)(n^2 - 2) = 0 \Rightarrow -(n-2)(n+2)(n^2+2) = 0$$

$$a_1 = 4^2 + 4 = 20 \quad a_2 = 2 \times 2 = 4 \quad a_3 = 2 \quad S_V = a_1 \frac{1-q^V}{1-q} = 20 \cdot \frac{1-(1/4)^V}{1-1/4}$$

$$20 \cdot \frac{1 - \frac{1}{4^V}}{\frac{3}{4}} = 20 \times \frac{4^V - 1}{4^V} \times \frac{4}{3} = \frac{160}{3} \quad n = 2 \quad q = \frac{1}{4} \quad S_V = \frac{160}{3}$$

$$1 + q + q^2 + q^3 + q^4 = \frac{121}{11} \quad a_1 = 242 \quad q \approx 0.125 \quad (\text{ریشه هفتم})$$

$$S_8 = a_1 \frac{1-q^8}{1-q} = 242 \cdot \frac{1-q^8}{1-q} \quad S_8 = 404$$

$$\alpha = \frac{4^4 - 1}{4} = \frac{4^4}{4} = 1.18 = \frac{21}{4} \quad A = 1 + 3\alpha = 1 + 3 \cdot \frac{4^4}{4} = 1 + \frac{128}{4} =$$

$$1 + \frac{128}{4} = 1 + 31.8 = \frac{68}{4} \quad B = 1.2^3 = 2^3 = 8 \quad A = \frac{98}{4} \quad B = 8$$

$$A+B = \frac{11}{2}$$

$$\alpha = \frac{1}{4} \Rightarrow a_{1,1} = -242 \times 4 = 1 \Rightarrow t_n = 1, t_n = 4^V \Rightarrow q = \frac{1}{4}$$

$$a_r = a + rd \quad a_v = a + vd \quad a_q = a + nd$$

$$(a + rd)^r = (a + rd)(a + nd)$$

$$(a + rd)^r \Rightarrow (a + rd)(a + nd) = 0 \Rightarrow rad + r \cdot d^r = 0 \Rightarrow rd(a + 1 \cdot d) = 0$$

$$d = 0 \quad \underline{d = -\frac{a}{10}}$$

$$a_r = A + d \quad a_f = A + rd \quad a_n = A + vd \quad (A + rd)^r = (A + d)(A + vd)$$

$$g_1 = g_r^q = \frac{1}{r} \cdot r^q = \frac{1}{r} \cdot 81r = \boxed{81}$$

$$rgr \quad rgr^r \quad gr^r \quad rgr^r - rgr = gr^r - rgr^r \quad r - r = r^r - r \Rightarrow$$

$$r^r - r + r = 0 \Rightarrow (r-1)(r-r) = 0 \quad \boxed{r=r}$$

$$a_f = a + rd \quad a_n = a + vd \quad a_{1r} = a + rd$$

$$(a + vd + c)^r = (a + rd + c)(a + vd + c) \quad (u + vd)^r = (u + rd)(u + vd)$$

$$u^r + 1rud + rvd^r = u^r + 1rud + rvd^r \Rightarrow -ud + 1rd^r = 0 \quad r = \frac{u+vd}{u+rd} = \frac{1rd+vd}{1rd+rd}$$

$$\frac{r}{1r} = \frac{r}{r} = r$$

$$a(1+r^r+r^r) = vr \quad ar^r = a + d', ar^r = a + rd' \quad a + rd' = ar^r, d' = ar^r - a =$$

$$a(r^r - 1) \quad a + ra(r^r - 1) = ar^r \Rightarrow ar^r - a = r^r + r + 1 = 0 \Rightarrow$$

$$(r-1)(r-1) = 0 \quad d' = a(r^r - 1) = a(r-1) = va \rightarrow r=r, a(1+r^r+r^r) = vr$$

$$a(1+r+r) = vr \Rightarrow a=1 \quad \boxed{v} \rightarrow d$$