۱۹/۷۵

نام و نام خانوادگی ...[illegible]... پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس ......

۱	د) $a_n = \frac{1}{2} \times 2^{n-1}$ $128 = \frac{1}{2} \times 2^{n-1}$ $2^{n-1} = 256 = 2^8$ $n-1 = 8$ $\boxed{n=9}$ ۵	ج) $\sqrt{a_4 \times a_{10}}$ $a_4 = \frac{1}{2} \times 2^3 = 4$ $a_{10} = 256$ $\sqrt{4 \times 256} = \sqrt{1024} = 32$	ب) $\frac{a_{17}}{a_{13}} = \frac{a_1 r^{16}}{a_1 r^{12}}$ $= r^4 \longrightarrow (2)^4 = 16$	الف) $r = \frac{\frac{1}{1}}{\frac{1}{2}} = 2$ $a_{10} = a_1 r^9$ $a_{10} = \frac{1}{2} \times 512$ $a_{10} = 256$
۲	۵ $a_5 = 12$ $a_8 = 96$ $r^3 = \frac{96}{12} = 8$ $r = 2$ $a_{10} = a_5 \times r^5$ $a_{10} = 12 \times 2^5 = \boxed{384}$			
۳	ب) ۵ $a_1 \times a_5$ $\frac{a_3}{r^2} \times (a_3 r^2) = a_3^2$ $a_1 \times a_5 = 3^2 = \boxed{9}$	الف) $\frac{a_3}{r^2} \times \frac{a_3}{r} \times a_3 \times a_3 r \times a_3 r^2 = 243$ $a_3^5 = 243 \quad a_3 = \boxed{3}$		
۴	$r^2 = \frac{2^b}{2^a}$ $32 = 2^5 = 2^{b-a}$ $b-a = 5$ $\frac{b-a}{n+1} \longrightarrow \frac{5}{1+1} = \frac{5}{2} = 2/5$ ۵			
۵	$\frac{a_7}{a_3} = r^4 = \frac{x}{1-x}$ $\frac{a_{11}}{a_7} = r^4 = \frac{x+1}{x}$ $\frac{x}{1-x} = \frac{x+1}{x}$ $x^2 = x+1-x^2-x$ $2x^2 = 1$ $x^2 = \frac{1}{2} \longrightarrow x = \pm\frac{1}{\sqrt{2}} = \pm\frac{\sqrt{2}}{2}$ ۱/۷۵ $\longrightarrow$ فقط $\frac{\sqrt{2}}{2}$ درسته			

۶

$a_1+a_4=28 \to a+ar^3=28 \to a=\frac{28}{r(1+r)}(1+r^3) \to 12(1+r^3)=28r(1+r)$

$a_2+a_3=12 \to ar+ar^2=12 \to a=\frac{12}{r(1+r)}$

$12+12r^3=28r+28r^2$

$3r^3-7r^2-7r+3=0$

$\downarrow$

$r=3$

$a_1=\frac{12}{3(1+3)}=\frac{12}{12}=1$

$1,3,9,\boxed{27}$

۷

$a_1+a_2+a_3=13 \to a(1+r+r^2)=13 \to \frac{3}{r}(1+r+r^2)=13$

$a_1a_2a_3=27 \to a^3r^3=27 \to ar=3 \to a=\frac{3}{r}$

$3(1+r+r^2)=13r$

$3r^2-10r+3=0$

$a=1 \leftarrow r=3 \qquad r=\frac{1}{3} \to a=9$

$1,3,9$

$9,3,1$

۸

الف)

$a_n=\underbrace{2,6}_{\times 3},\underbrace{\,,18}_{\times 3},\ldots$

$S_{10}=2\left(\frac{3^{10}-1}{\underbrace{3-1}_{2}}\right) \to S_{10}=3^{10}-1$

ب)

$a_1a_2\ldots a_{10}=$

$a_n=a_1\cdot r^{n-1} \to a_n=2\times 3^{10-1}=2\times 3^9$

$a_1a_2\ldots a_{10}=(a_1\times a_{10})^{\frac{n}{2}}=(2\times 2\times 3^9)^5$

$=2^{10}\times 3^{45}$

۹

$a_1, a_1q, a_1q^2,\ldots$

$a_1q-a_1,\ a_1q^2-a_1q,\ a_1q^3-a_1q^2$

$a_1(q-1),\ \underbrace{a_1q(q-1)}_{\times q},\ \underbrace{a_1q^2(q-1)}_{\times q}$

قدر نسبت $=\frac{a_1q(q-1)}{a_1(q-1)}=q$

۱۰

الف)

$S_n=\frac{n}{2}(2a+(n-1)d)$

$a_n=a_1+(n-1)d$

$a_1+(a_1+d)+(a_1+2d+\ldots+(a_1+(n-1)d)$

$na_1+\left(\frac{(n-1)n}{2}\right)(d)$ فاکتور $\frac{n}{2}$

$S=\frac{n}{2}(2a_1+(n-1)d)$

ب)

$S_n=a\left(\frac{q^n-1}{q-1}\right)$

$S_nq=a_1q+\cancel{a_1q^2}+\cancel{a_1q^3}+\ldots+a_1q^n$

$S_n=a_1+\cancel{a_1q}+\cancel{a_1q^2}+\ldots+\cancel{a_1q^{n-1}}$

$S_nq-S_n=a_1q^n-a_1 \to S_n(q-1)=a_1(q^n-1)$

$\downarrow$

$S_n=a_1\left(\frac{q^n-1}{q-1}\right)$