$f(1)=1 \quad f(3)=9$ (٢٠)

١-
$3^{\alpha+\beta}=1 \quad 3^{2\alpha+\beta}=9 \longrightarrow \frac{3^{2\alpha}}{3^{\alpha+\beta}}=3^{\alpha}=9 \quad 2\alpha=2 \quad \alpha=1$
$\beta=-1$

$f(x)=3^{x-1} \xrightarrow{x=0} f(0)=3^{-1}=\frac{1}{3}$

٢-
$a_{n+1}=3^{n+2}$
$a_n=3^{n+1}$
$a_{n+1}-a_n=0 \quad 3^{n+2}-3^{n+1}=0 \quad t^2-4t+3=0$
$(t-3)(t-1)=0 \quad 3^n=3 \quad 3^n=1$
$a_1=3^2=9 \quad a_2=3^3=27$
$a_{n+1}=a_n+d \quad 27=9+d \quad d=18$
$a_{10}=9+9\times 18=171$

٣-
$(a_1+a_2)(a_1+a_2+a_3)+a_3^2=(a_1+a_2+a_3)^2$
$a_1+a_2+a_3=3a_2=3\times 3^2=27$
$a_1+a_3=2a_2=2\times 3^2=18$
$27\times 18+9^2=27^2$
$729=729$

٤-
$\binom{10}{3}(1-x)^3=0 \quad (1-x)^3=0 \quad 1-x=0 \quad x=1$
$\binom{10}{3}=\frac{10\times 9\times 8}{3\times 2\times 1}=120$

٥-
$\binom{10}{2}(x-2)^2(x^2+2x+4)^2=2 \quad x^3=16 \quad x=\sqrt[3]{16}$
$x^3-8=0 \quad x^3=8$
$\binom{10}{2}\sqrt[3]{2}^2=2$

٦-
$\binom{10}{\frac{1}{2}(x-2)}=2 \quad 10-x+2=10 \quad x=-1$
$y=\frac{2}{x-2}=\frac{2}{-3}$

٧-
$x^2-4x-2=0 \quad (x-2)^2-6=0 \quad x-2=\pm\sqrt{6}$
$3^{x^2-2x}=3^{x^2} \quad x^2-2x=x^2$
$\binom{6}{3}p^3=\frac{1}{2}$

٨-

$$\text{ل}_{٠,١}^{١٨} = \frac{١}{٣}\left(\text{ل}_{٠,١}^{٣} + \text{ل}_{٠,١}^{٣}\right) = \frac{١}{٣}\left(١ + ٢ \times \frac{٨}{٢٧}\right) = \frac{١}{٣} \times \frac{٣٥}{٢٧} = \frac{٧}{٥٤}$$

$$\text{ل}_{٠,١}^{١٨} = \frac{٥}{٧}$$

٩-

$$\text{ل}_{٠,١}^{١٢} = \frac{\text{ل}_{٠,١}^{٩}}{\text{ل}_{٠,١}^{١٢}} = \frac{\text{ل}_{٠,١}^{٣} + \text{ل}_{٠,٥}^{٣}}{\text{ل}_{٠,١}^{٣} + \text{ل}_{٠,١}^{٣}} = \frac{\frac{١}{٢} + ٠,٨}{١ + ٠,٨} = \frac{١,٣}{١,٨} = \frac{١٣}{١٨}$$

١٠-

$$٩\text{ل}_{٠,١}^{٢} - ٩ + b\text{ل}_{٠,١}^{٢} = ٠ \qquad s = \frac{-٩}{٩\text{ل}_{٠,١}^{٢}} = \frac{-١}{\text{ل}_{٠,١}^{٢}} \qquad \alpha = -١$$

$$\alpha\beta = \frac{\text{ل}_{٠,١}^{٢} - ١}{\text{ل}_{٠,١}^{٢}} = \frac{b}{٩} = \frac{\text{ل}_{٠,١}^{٣}}{\text{ل}_{٠,١}^{٢}} = \text{ل}_{٠,١}^{٣} \qquad \beta = \frac{-١}{\text{ل}_{٠,١}^{٢}} \quad ، \quad ١ = \frac{١ - \text{ل}_{٠,١}^{٢}}{\text{ل}_{٠,١}^{٢}}$$

$$\left(\sqrt{٣}\right)^{\text{ل}_{٠,١}^{٣}} = ٣^{\frac{١}{٢}\text{ل}_{٠,١}^{٣}} = ٣^{\frac{١}{٢}} = \sqrt{٣}$$