

$(1 + 4 + 12 + \dots + 24)(1 + 24 + 12 + \dots + 24) \rightarrow (7)(4) = 28$ (۲)
 کامل ۰ از اینجا به بعد یکان صفر یکان صفر یکان = ۲ ✓
 یکای هجده اعداد صفر است

$\sqrt[4]{\frac{1}{4+\sqrt{4}}} \sqrt[4]{1+2\sqrt{4}} = \sqrt[4]{\frac{1+2\sqrt{4}}{4+\sqrt{4}}} = \sqrt[4]{2} \quad \checkmark$ (الف) (۱)

$\left(\frac{\sqrt{2}+\sqrt{5}}{\sqrt{2}(\sqrt{5}+\sqrt{2})}\right) (\sqrt{3}-\sqrt{5} - \sqrt{3}+\sqrt{5}) = \frac{1}{\sqrt{2}} \times -\sqrt{2} = \boxed{-1}$ (ب) ۲
 $a \quad b^2 = 3 - \sqrt{5} + 3 + \sqrt{5} - 2\sqrt{2} \quad b < 0 \rightarrow b = -\sqrt{2}$

$\frac{(2\sqrt{2}+3\sqrt{3})(5+\sqrt{6})}{25-6} - \frac{2}{\sqrt{3}-1} = \frac{19\sqrt{2}+19\sqrt{3}}{19} - \frac{2(\sqrt{3}+1)}{2} = \frac{19(\sqrt{2}+\sqrt{3})}{19} - (\sqrt{3}+1) = \boxed{\sqrt{2}-1}$ (الف) (۲)
 $\frac{(3\sqrt{3}-1)(4-\sqrt{3})}{14-3} + \frac{1}{2-\sqrt{3}} = \frac{12(\sqrt{3}-1)}{11} + \frac{2+\sqrt{3}}{4-3} = 2\sqrt{3}+1 \quad \checkmark$ (ب) ۳

(الف) (۱)
 $2^{\frac{1}{2}} \times 3 \times 2^{\frac{1}{4}} \times 2 \times 2^{\frac{1}{4}} = 4 \times \underbrace{2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times 2^{\frac{1}{4}}}_4 = \boxed{12} \quad \checkmark$ (ب) ۴

$\frac{2^x(1+3+9+27+81+243)}{2^x(\frac{1}{4}+\frac{1}{2}+1+2+4+8)} = 52 \Rightarrow \frac{2^x 4F \times 2^x}{\frac{64}{2^x} \times 2^x} = 52 \Rightarrow$ (۲)
 $\left(\frac{2}{4}\right)^x = \frac{4F}{F+8} \Rightarrow x = 2 \quad \checkmark$ ۵

$$(a-b)^F (a+b)^F = (a^F - b^F)^F \rightarrow (a^F - b^F)^F = (F - F\sqrt{F-1})^F = 1(F - F\sqrt{F-1}) = 14(F - \sqrt{F}) \quad (1)$$

$$(a^F - b^F) = \sqrt{F-1} - \sqrt{F+1}$$

$$(a^F - b^F)^F = (\sqrt{F-1} - \sqrt{F+1})^F = \sqrt{F-1} + \sqrt{F+1} - F\sqrt{(F-1)(F+1)} = F - F\sqrt{F-1}$$

$$(1) \rightarrow t(F - \sqrt{F}) = 14(F - \sqrt{F}) \Rightarrow t = 14 \quad \checkmark$$

$$\left(a + \frac{1}{a}\right)^F - F = F^t \Rightarrow F^t = \left(a^F + \frac{1}{a^F} + F - F\right)^F = a^F + \frac{1}{a^F} + F$$

$$F^t = F - F\sqrt{F} + \frac{1}{F - F\sqrt{F}} + F = F - F\sqrt{F} + \frac{F + F\sqrt{F}}{1} + F = 14$$

$$F^t = 14 = F^F \Rightarrow t = F \quad \checkmark$$

$$A = \sqrt[F]{F\sqrt{14}} \left(\frac{1}{F}\right)^{-\frac{F}{F}} = \sqrt[F]{F\sqrt{14}} \sqrt[F]{F} = \sqrt[F]{F^2} = F^{\frac{2}{F}} = F \quad \checkmark$$

$$(FA)^{-\frac{1}{F}} = \sqrt[F]{\frac{1}{F}} = \frac{1}{F} \quad \checkmark$$

$$\sqrt{a} = F\sqrt{a\sqrt{a}} \Rightarrow 1 = F\sqrt{a\sqrt{a}} = F\sqrt{a^{\frac{3}{2}}} \Rightarrow a = +\sqrt{\frac{1}{F}} = F^{-\frac{1}{F}}$$

$$\frac{1}{a} = F^{\frac{F}{F}} = F\sqrt{F} \rightarrow \frac{F\sqrt{F} - F}{\sqrt{F} + 1} = \frac{F(\sqrt{F} - 1)}{\sqrt{F} + 1} \times \frac{\sqrt{F} - 1}{\sqrt{F} - 1} = \frac{F(F - F\sqrt{F})}{F} = F - F\sqrt{F} \quad \checkmark$$

$$(\sqrt{x+a} - \sqrt{x-F})(\sqrt{x+a} + \sqrt{x-F}) = x+a - x+F \Rightarrow \sqrt{x+a} + \sqrt{x-F} = \frac{a}{F} + F$$

$$\sqrt{x+a} + \sqrt{x-F} - F = \frac{a}{F} \quad \checkmark$$

١٤ الف)

$$\overbrace{\frac{\sqrt{1+\sqrt{3}} + \sqrt{\sqrt{3}-1}}{\sqrt{\sqrt{3}-\sqrt{2}}}}^A - 2 = \frac{\sqrt{2}(\sqrt{\sqrt{3}+\sqrt{2}})}{\sqrt{\sqrt{3}-\sqrt{2}}} - 2 = \sqrt{2} \left(\sqrt{\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}} \right) - 2 =$$

→ $A^T = 2\sqrt{3} + 2\sqrt{2} \rightarrow A = \sqrt{2}(\sqrt{\sqrt{3}+\sqrt{2}})$

$$\sqrt{2} \sqrt{(\sqrt{3}+\sqrt{2})^T} = \sqrt{4} + 2 - 2 = \boxed{\sqrt{4}}$$