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(303)

$$\begin{cases} a_3 + a_4 = 10 \\ a_3^2 + a_4^2 = 52 \end{cases}$$

$$\begin{cases} a_1 q^2 + a_1 q^3 = 10 \\ a_1^2 q^4 + a_1^2 q^6 = 52 \end{cases}$$

$$\begin{cases} a_1 q^2 (1+q) = 10 & (1) \\ a_1^2 q^4 (1+q^2) = 52 \end{cases}$$

$$\begin{cases} a_1^2 q^4 (1+q)^2 = 100 \\ a_1^2 q^4 (1+q^2) = 52 \end{cases}$$

$$\frac{(1+q)^2}{1+q^2} = \frac{100}{52} = \frac{25}{13}$$

$$\frac{1+2q+q^2}{1+q^2} = \frac{25}{13}$$

$$13q^2 + 26q + 13 = 25 + 25q^2$$

$$12q^2 - 26q + 12 = 0$$

$$6q^2 - 13q + 6 = 0$$

$$q = \frac{3}{2} \quad q = \frac{2}{3}$$

$$\downarrow \\ \boxed{a_1 = \frac{16}{9}}$$

$$\downarrow \\ \boxed{a_1 = 13\frac{1}{2}}$$