Simplify the complex fraction by the method indicated.

1) Use any method

$$\frac{\frac{a+4}{6}}{\frac{16-a^2}{42}}$$

$$= \frac{a+4}{6} \div \frac{16-a^2}{42}$$

$$= \frac{a+4}{6} \cdot \frac{42}{16-a^2}$$

$$= \frac{a+4}{6} \cdot \frac{42}{(4-a)(4+a)} \quad \text{Note: } a+4 \text{ is exactly the same thing as } 4+a$$

$$= \frac{1}{1} \cdot \frac{7}{(4-a)} \quad \text{after canceling common factors between numerator and denominator}$$

$$= \frac{7}{4-a}$$

2) Use Method 1: simplify numerator and denominator separately, then divide and reduce

$$\frac{\frac{8}{11} + \frac{25}{44}}{\frac{27}{28} - \frac{4}{7}}$$

$$= \frac{\frac{(8)(4)}{(11)(4)} + \frac{25}{44}}{\frac{27}{28} - \frac{(4)(4)}{(7)(4)}}$$

$$= \frac{\frac{32}{44} + \frac{25}{44}}{\frac{27}{28} - \frac{16}{28}}$$

$$= \frac{\frac{57}{44}}{\frac{11}{28}}$$

$$= \frac{57}{44} \cdot \frac{28}{11} \text{ Now reduce before you multiply}$$

$$= \frac{57}{11} \cdot \frac{7}{11}$$

$$= \frac{399}{121}$$

3) Use Method 2: multiply top and bottom by the LCM of all denominators to clear the denominators, then simplify

$$\frac{\frac{11}{y^2} + \frac{1}{y}}{\frac{121}{y^2} - 1}$$

$$= \frac{\left(\frac{11}{y^2}\right)\left(y^2\right) + \left(\frac{1}{y}\right)\left(y^2\right)}{\left(\frac{121}{y^2}\right)\left(y^2\right) - 1(y^2)}$$

$$= \frac{11 + y}{121 - y^2}$$

$$= \frac{11 + y}{(11 + y)(11 - y)}$$

$$= \frac{1}{11 - y}$$