

$$\boxed{1} \text{ 解答 (1) } 3\sqrt{2} > \sqrt{17} \quad (2) \frac{1}{3} < \frac{1}{\sqrt{6}}$$

$$(1) (3\sqrt{2})^2 = 18, (\sqrt{17})^2 = 17 \text{ で, } 18 > 17 \text{ であるから}$$

$$\sqrt{18} > \sqrt{17} \quad \text{すなわち} \quad 3\sqrt{2} > \sqrt{17}$$

$$(2) \left(\frac{1}{3}\right)^2 = \frac{1}{9}, \left(\frac{1}{\sqrt{6}}\right)^2 = \frac{1}{6} \text{ で, } \frac{1}{9} < \frac{1}{6} \text{ であるから}$$

$$\sqrt{\frac{1}{9}} < \sqrt{\frac{1}{6}} \quad \text{すなわち} \quad \frac{1}{3} < \frac{1}{\sqrt{6}}$$

$$\boxed{2} \text{ 解答 (1) } \sqrt{7} \quad (2) 12\sqrt{7} \quad (3) \sqrt{14} \quad (4) -\sqrt{2} \quad (5) 3 \quad (6) 4\sqrt{3}$$

$$(1) \sqrt{21} \div \sqrt{3} = \frac{\sqrt{21}}{\sqrt{3}}$$

$$= \sqrt{\frac{21}{3}}$$

$$= \sqrt{7}$$

$$(2) \sqrt{24} \times \sqrt{42} = \sqrt{24 \times 42}$$

$$= \sqrt{2^3 \times 3 \times 2 \times 3 \times 7}$$

$$= \sqrt{(4 \times 3)^2 \times 7}$$

$$= 12\sqrt{7}$$

$$(3) \sqrt{7} \times \sqrt{6} \div \sqrt{3} = \sqrt{\frac{7 \times 6}{3}} = \sqrt{14}$$

$$(4) \sqrt{8} - \frac{6}{\sqrt{2}} = 2\sqrt{2} - \frac{6 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$$

$$= 2\sqrt{2} - \frac{6\sqrt{2}}{2}$$

$$= 2\sqrt{2} - 3\sqrt{2}$$

$$= -\sqrt{2}$$

$$(5) (3 + \sqrt{6})(3 - \sqrt{6}) = 3^2 - (\sqrt{6})^2$$

$$= 9 - 6$$

$$= 3$$

$$(6) \sqrt{75} - \frac{9}{\sqrt{3}} + \sqrt{12} = 5\sqrt{3} - \frac{9 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} + 2\sqrt{3}$$

$$= 7\sqrt{3} - \frac{9\sqrt{3}}{3}$$

$$= 7\sqrt{3} - 3\sqrt{3}$$

$$= 4\sqrt{3}$$

$$\boxed{3} \text{ 解答 } 10 + 2\sqrt{5}$$

$$x^2 + xy = x(x + y)$$

$$= (\sqrt{5} + 1)(\sqrt{5} + 1) + (\sqrt{5} - 1)$$

$$= (\sqrt{5} + 1) \times 2\sqrt{5}$$

$$= \sqrt{5} \times 2\sqrt{5} + 1 \times 2\sqrt{5}$$

$$= 10 + 2\sqrt{5}$$