

QUESTION 16

$$-4\sqrt{63} + 3\sqrt{5} + 4\sqrt{45}$$

$$4\sqrt{63} = 12\sqrt{7}$$

$$4\sqrt{63}$$

$$\sqrt{63} = 3\sqrt{7}$$

$$= 4 \times 3\sqrt{7}$$

multiply the numbers: $4 \times 3 = 12$

~~$$= 12\sqrt{5}$$~~

$$= 12\sqrt{5}$$

$$= -12\sqrt{7} + 3\sqrt{5} + 12\sqrt{5}$$

Add similar elements: $3\sqrt{5} + 12\sqrt{5} = 15\sqrt{5}$

$$= -12\sqrt{7} + 15\sqrt{5}$$

QUESTION 17

$$4\sqrt{2} - 2\sqrt{18} - 3\sqrt{7} - 4\sqrt{54}$$

$$2\sqrt{18} = 6\sqrt{2}$$

$$2\sqrt{18}$$

$$\sqrt{18} = 3\sqrt{2}$$

$$\sqrt{18}$$

Prime factorization of 18: 2×3^2

$$18 = 2 \times 3 \times 3$$

$$= 2 \times 3^2$$

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

Apply radical rule: $\sqrt[n]{ab} = \sqrt[n]{a} \sqrt[n]{b}$

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

Apply radical rule: $\sqrt[n]{a^n} = a$

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

$$= 3\sqrt{2}$$

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

Multiply: $2 \times 3 = 6$

$$6\sqrt{2}$$

$$4\sqrt{54} = 12\sqrt{6}$$

$$4\sqrt{54}$$

$$\sqrt{54} = 3\sqrt{6}$$

$$= 4 \times 3\sqrt{6}$$

multiply $4 \times 3 = 12$

$$= 12\sqrt{6}$$

$$= 4\sqrt{2} - 6\sqrt{2} - 3\sqrt{7} - 12\sqrt{6}$$

Add similar elements

$$= -2\sqrt{2} - 3\sqrt{7} - 12\sqrt{6}$$