

6.5 In Class Practice/Review

Key

Simplify.

$$1) -5\sqrt{3} - 3\sqrt{3} = \boxed{-8\sqrt{3}}$$

$$2) 2\sqrt{8} - \sqrt{8} = \boxed{\sqrt{8}}$$

$$3) -3\sqrt{12} + 3\sqrt{3} + 3\sqrt{20}$$

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

$$3\sqrt{20} = 3\sqrt{4 \cdot 5} = 3 \cdot 2\sqrt{5} = 6\sqrt{5}$$

$$-6\sqrt{3} + 3\sqrt{3} + 6\sqrt{5}$$

$$= \boxed{-3\sqrt{3} + 6\sqrt{5}}$$

$$4) -2\sqrt{45} - 3\sqrt{20} - 2\sqrt{6}$$

$$-2\sqrt{9 \cdot 5} - 3\sqrt{4 \cdot 5} - 2\sqrt{6}$$

$$-2 \cdot 3\sqrt{5} - 3 \cdot 2\sqrt{5} - 2\sqrt{6}$$

$$-6\sqrt{5} - 6\sqrt{5} - 2\sqrt{6}$$

$$= \boxed{-12\sqrt{5} - 2\sqrt{6}}$$

$$5) \sqrt[3]{3} \cdot \sqrt[3]{-20}$$

$$\sqrt[3]{3(-20)} = \sqrt[3]{-60}$$

$$6) \sqrt{6} \cdot \sqrt{2} = \sqrt{6 \cdot 2}$$

$$= \sqrt{12} = \sqrt{4 \cdot 3}$$

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

$$7) \sqrt[3]{3} \cdot \sqrt[3]{9}$$

$$\sqrt[3]{3 \cdot 9} = \sqrt[3]{27}$$

$$= \boxed{3}$$

$$8) 3\sqrt{3}(4 - 3\sqrt{5})$$

$$12\sqrt{3} - 9\sqrt{3 \cdot 5}$$

$$= \boxed{12\sqrt{3} - 9\sqrt{15}}$$

$$9) 4\sqrt{15}(\sqrt{6} + \sqrt{5})$$

$$4\sqrt{15 \cdot 6} + 4\sqrt{15 \cdot 5}$$

$$4\sqrt{90} + 4\sqrt{75}$$

$$= 4\sqrt{9 \cdot 10} + 4\sqrt{25 \cdot 3}$$

$$= 3 \cdot 4\sqrt{10} + 4 \cdot 5\sqrt{3}$$

$$= \boxed{12\sqrt{10} + 20\sqrt{3}}$$

$$10) -\sqrt{2}(\sqrt{10} - 4\sqrt{6})$$

$$-\sqrt{20} + 4\sqrt{12}$$

$$= -\sqrt{4 \cdot 5} + 4\sqrt{4 \cdot 3}$$

$$= -2\sqrt{5} + 4 \cdot 2\sqrt{3}$$

$$= \boxed{-2\sqrt{5} + 8\sqrt{3}}$$

$$11) \frac{\sqrt{9}}{\sqrt{25}} = \boxed{\frac{3}{5}}$$

$$12) \frac{\sqrt{4}}{\sqrt{36}} = \frac{2}{6} = \boxed{\frac{1}{3}}$$

$$13) \frac{4\sqrt{2}}{3\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

$$= \frac{4\sqrt{2 \cdot 5}}{3\sqrt{5 \cdot 5}} = \frac{4\sqrt{10}}{3\sqrt{25}}$$

$$= \frac{4\sqrt{10}}{3 \cdot 5} = \boxed{\frac{4\sqrt{10}}{15}}$$

$$14) \frac{\sqrt[3]{10}}{\sqrt[3]{32}} = \sqrt[3]{\frac{10}{32}} = \sqrt[3]{\frac{5}{16}}$$

$$\frac{\sqrt[3]{5}}{\sqrt[3]{16}} = \frac{\sqrt[3]{5}}{\sqrt[3]{8 \cdot 2}} = \frac{\sqrt[3]{5}}{2\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}} = \frac{\sqrt[3]{5 \cdot 2^2}}{2 \cdot 2} = \frac{\sqrt[3]{20}}{2 \cdot 2} = \boxed{\frac{\sqrt[3]{20}}{4}}$$

$$15) \frac{3\sqrt[4]{4}}{2\sqrt[4]{8}} \cdot \frac{4\sqrt[4]{8^3}}{4\sqrt[4]{8^3}}$$

$$\frac{3\sqrt[4]{4 \cdot 512}}{2\sqrt[4]{8 \cdot 8^3}} = \frac{3\sqrt[4]{2048}}{2 \cdot 8}$$

$$= \frac{3\sqrt[4]{4^4 \cdot 8}}{16} = \frac{3 \cdot 4\sqrt[4]{8}}{16} = \frac{12\sqrt[4]{8}}{16}$$

$$17) \frac{\sqrt{3}}{-1-\sqrt{5}} \cdot \frac{(-1+\sqrt{5})}{(-1+\sqrt{5})} = \boxed{\frac{3\sqrt{8}}{4}}$$

$$= \frac{-\sqrt{3} + \sqrt{15}}{1-5} = \boxed{\frac{-\sqrt{3} + \sqrt{15}}{4}}$$

$$16) \frac{\sqrt[3]{10}}{\sqrt[3]{625}} = \sqrt[3]{\frac{10}{625}} = \frac{\sqrt[3]{2}}{\sqrt[3]{125}} = \boxed{\frac{\sqrt[3]{2}}{5}}$$

$$\star \frac{(-1-\sqrt{5})(-1+\sqrt{5})}{(-1-\sqrt{5})(-1+\sqrt{5})}$$

$$1 - \sqrt{5} + \sqrt{5} - \sqrt{25}$$

$$= 1 - 5$$

$$= -4$$