

3/19/15

Radical  
Operations  
Work 2

$$39. 2\sqrt{5} \cdot 3\sqrt{10}$$

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

$$\boxed{30\sqrt{2}}$$

$$18. \frac{\sqrt{12} + \sqrt{24}}{2\sqrt{3} + 2\sqrt{6}}$$

$$40. (3\sqrt{2})(-4\sqrt{10})$$

$$-12\sqrt{2 \cdot 2 \cdot 5}$$

$$\boxed{-24\sqrt{5}}$$

$$25. \frac{\sqrt{\frac{2}{2}} + \sqrt{2 \cdot \frac{2}{2}}}{\frac{\sqrt{2}}{2} + \frac{2\sqrt{2}}{2}}$$

$$\frac{3\sqrt{2}}{2}$$

$$47. \sqrt[3]{4x^2} \cdot \sqrt[3]{2x^2}$$

$$\sqrt[3]{\frac{2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x}{3 \cdot 3}} \cdot \sqrt[3]{\frac{3}{3}}$$

$$\sqrt[3]{\frac{2 \cdot 2 \cdot 2 \cdot 3 \cdot \cancel{x \cdot x \cdot x} \cdot x}{3}}$$

$$\frac{2x^3\sqrt[3]{3x}}{3}$$

$$31. \frac{\sqrt[3]{24} + \sqrt[3]{81}}{2\sqrt[3]{3} + 3\sqrt[3]{3}}$$

$$\frac{5\sqrt[3]{3}}{5\sqrt[3]{3}}$$

$$33. \frac{\sqrt[4]{48} - \sqrt[4]{243}}{2\sqrt[4]{3} - 3\sqrt[4]{3}}$$

$$\frac{-\sqrt[4]{3}}{-\sqrt[4]{3}}$$

$$48. \sqrt[4]{4x^2} \cdot \sqrt[4]{4x^3}$$

$$\sqrt[4]{\frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x}{5 \cdot 5 \cdot 5}} \cdot \sqrt[4]{\frac{5}{5}}$$

$$\sqrt[4]{\frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5 \cdot \cancel{x \cdot x \cdot x} \cdot x}{5}}$$

$$\frac{2x^4\sqrt[4]{5x}}{5}$$

$$36. \frac{\sqrt[3]{2000w^2z^5} - \sqrt[3]{16w^2z^5}}{10z\sqrt[3]{2w^2z^2} - 2z\sqrt[3]{2w^2z^2}}$$

$$\frac{8z\sqrt[3]{2w^2z^2}}{8z\sqrt[3]{2w^2z^2}}$$

$$37. \frac{\sqrt{3} \cdot \sqrt{5}}{\sqrt{15}}$$

$$59. (2\sqrt{5} - 7)(2\sqrt{5} + 4)$$

$$20 + 8\sqrt{5} - 4\sqrt{5} - 28$$

$$\boxed{-8 - 6\sqrt{5}}$$

$$62. (3\sqrt{3} - \sqrt{2})(\sqrt{2} + \sqrt{3})$$

$$3\sqrt{6} + 9 - 2 - \sqrt{6}$$

$$\boxed{7 + 2\sqrt{6}}$$

$$63. \sqrt[3]{3} \cdot \sqrt{3}$$

$$3^{\frac{1}{3}} \cdot 3^{\frac{1}{2}}$$

$$3^{\frac{2}{6}} \cdot 3^{\frac{3}{6}}$$

$$3^{\frac{5}{6}}$$

$$\boxed{\sqrt[6]{3^5} \text{ or } \sqrt[6]{243}}$$

$$65. \sqrt[3]{5} \cdot \sqrt[4]{5}$$

$$5^{\frac{1}{3}} \cdot 5^{\frac{1}{4}}$$

$$5^{\frac{4}{12}} \cdot 5^{\frac{3}{12}}$$

$$5^{\frac{7}{12}}$$

$$\boxed{\sqrt[12]{5^7} \text{ or } \sqrt[12]{78125}}$$

$$67. \sqrt[3]{2} \cdot \sqrt{5}$$

$$2^{\frac{1}{3}} \cdot 5^{\frac{1}{2}}$$

$$2^{\frac{2}{6}} \cdot 5^{\frac{3}{6}}$$

$$\boxed{\sqrt[6]{2^2 \cdot 5^3} \text{ or } \sqrt[6]{500}}$$

$$69. \sqrt[3]{2} \cdot \sqrt[4]{3}$$

$$2^{\frac{1}{3}} \cdot 3^{\frac{1}{4}}$$

$$2^{\frac{4}{12}} \cdot 3^{\frac{3}{12}}$$

$$\boxed{2^4 \cdot 3^3 \text{ or } 12 \sqrt[12]{432}}$$

$$73. (\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})$$

$$5 - 2$$

$$\boxed{3}$$

$$77. (3\sqrt{2} + \sqrt{5})(3\sqrt{2} - \sqrt{5})$$

$$18 - 5$$

$$\boxed{13}$$

$$80. (4\sqrt{y} + 3\sqrt{z})(4\sqrt{y} - 3\sqrt{z})$$

$$\boxed{16y - 9z}$$

$$91. \frac{1}{\sqrt{2}} - \frac{1}{\sqrt{8}} + \frac{1}{\sqrt{18}}$$

$$\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} - \frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} + \frac{1}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{4} + \frac{\sqrt{2}}{6}$$

$$\frac{6\sqrt{2}}{12} - \frac{3\sqrt{2}}{12} + \frac{2\sqrt{2}}{12}$$

$$\boxed{\frac{5\sqrt{2}}{12}}$$

$$92. \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} + \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} - \sqrt{3}$$

$$\frac{\sqrt{3}}{3} + \frac{\sqrt{3}}{3} - \frac{3\sqrt{3}}{3}$$

$$\frac{-\sqrt{3}}{3}$$

$$99. (3 + \sqrt{x})(3 + \sqrt{x})$$

$$9 + 3\sqrt{x} + 3\sqrt{x} + x$$

$$\boxed{x + 9 + 6\sqrt{x}}$$

$$115.) \sqrt[3]{\frac{x}{5}} \cdot \sqrt[3]{\frac{x^5}{5}}$$

$$\sqrt[3]{\frac{x^6}{5 \cdot 5}} \cdot \sqrt[3]{\frac{5}{5}}$$

$$\boxed{\frac{x^2 \sqrt[3]{5}}{5}}$$

$$104. (\sqrt{x-1} + 1)(\sqrt{x-1} + 1)$$

$$x-1 + \sqrt{x-1} + \sqrt{x-1} + 1$$

$$\boxed{x + 2\sqrt{x-1}}$$

$$113. \sqrt[3]{\frac{y^7}{2 \cdot 2 \cdot x}} \cdot \sqrt[3]{\frac{2x^2}{2x^2}}$$

$$\sqrt[3]{\frac{2x^2 y^7}{2x}} = \frac{y^2 \sqrt[3]{2x^2 y}}{2x}$$

$$114. \sqrt[4]{16} \cdot \sqrt[4]{3 \cdot 3 \cdot z}$$

$$\sqrt[4]{3 \cdot 3 \cdot z \cdot z \cdot z} \cdot \sqrt[4]{3 \cdot 3 \cdot z}$$

$$\sqrt[4]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot z}$$

$$\frac{3z}{2^4 \sqrt[4]{9z}}$$

$$\frac{3z}{3z}$$