

Division of Radicals

$$1. \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$2. \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$3. \frac{1}{\sqrt{7}} = \frac{1}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{7}}{7}$$

$$4. \frac{1}{\sqrt{x}} = \frac{1}{\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{\sqrt{x}}{x}$$

$$5. \frac{1}{\sqrt{y}} = \frac{1}{\sqrt{y}} \cdot \frac{\sqrt{y}}{\sqrt{y}} = \frac{\sqrt{y}}{y}$$

$$6. \frac{1}{\sqrt{2x}} = \frac{1}{\sqrt{2x}} \cdot \frac{\sqrt{2x}}{\sqrt{2x}} = \frac{\sqrt{2x}}{2x}$$

$$7. \frac{1}{\sqrt{3x}} = \frac{1}{\sqrt{3x}} \cdot \frac{\sqrt{3x}}{\sqrt{3x}} = \frac{\sqrt{3x}}{3x}$$

$$8. \frac{1}{\sqrt{7y}} = \frac{1}{\sqrt{7y}} \cdot \frac{\sqrt{7y}}{\sqrt{7y}} = \frac{\sqrt{7y}}{7y}$$

$$9. \frac{3}{\sqrt{5}} = \frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$$

$$10. \frac{4}{\sqrt{7}} = \frac{4}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{4\sqrt{7}}{7}$$

$$11. \frac{8}{\sqrt{2y}} = \frac{8}{\sqrt{2y}} \cdot \frac{\sqrt{2y}}{\sqrt{2y}} = \frac{8\sqrt{2y}}{2y} = \frac{4\sqrt{2y}}{y}$$

$$12. \frac{\sqrt{2}}{\sqrt{3}} = \frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{6}}{3}$$

$$13. \frac{\sqrt{5}}{\sqrt{2}} = \frac{\sqrt{5}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{10}}{2}$$

$$14. \frac{\sqrt{6}}{\sqrt{12}} = \frac{\sqrt{2 \cdot 3}}{\sqrt{2^2 \cdot 3}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$15. \frac{\sqrt{3}}{\sqrt{27}} = \frac{\sqrt{3}}{\sqrt{3^3}} = \frac{1}{\sqrt{3^2}} = \frac{1}{3}$$

$$16. \frac{\sqrt{2}+1}{\sqrt{3}} = \frac{(\sqrt{2}+1)}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{6}+\sqrt{3}}{3}$$

$$17. \frac{2-\sqrt{5}}{\sqrt{7}} = \frac{(2-\sqrt{5})}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{2\sqrt{7}-\sqrt{35}}{7}$$

$$18. \frac{x+\sqrt{7}}{\sqrt{5}} = \frac{(x+\sqrt{7})}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{x\sqrt{5}+\sqrt{35}}{5}$$

$$19. \frac{1}{\sqrt{2}+1} = \frac{1}{(\sqrt{2}+1)} \cdot \frac{(\sqrt{2}-1)}{(\sqrt{2}-1)} = \frac{(\sqrt{2}-1)}{2-1} = \frac{(\sqrt{2}-1)}{1}$$

$$20. \frac{1}{3+\sqrt{2}} = \frac{1}{(3+\sqrt{2})} \cdot \frac{(3-\sqrt{2})}{(3-\sqrt{2})} = \frac{(3-\sqrt{2})}{9-4} = \frac{(3-\sqrt{2})}{5}$$

$$21. \frac{1}{3-\sqrt{5}} = \frac{1}{(3-\sqrt{5})} \cdot \frac{(3+\sqrt{5})}{(3+\sqrt{5})} = \frac{(3+\sqrt{5})}{9-5} = \frac{(3+\sqrt{5})}{4}$$

$$22. \frac{4}{\sqrt{3}+1} = \frac{4}{(\sqrt{3}+1)} \cdot \frac{(\sqrt{3}-1)}{(\sqrt{3}-1)} = \frac{4(\sqrt{3}-1)}{3-1} = \frac{4(\sqrt{3}-1)}{2} = 2(\sqrt{3}-1)$$

$$23. \frac{-4}{3-\sqrt{7}} = \frac{-4}{(3-\sqrt{7})} \cdot \frac{(3+\sqrt{7})}{(3+\sqrt{7})} = \frac{-4(3+\sqrt{7})}{9-7} = \frac{-4(3+\sqrt{7})}{2} = -2(3+\sqrt{7}) = -6-2\sqrt{7}$$

$$24. \frac{9}{\sqrt{3}+\sqrt{5}} = \frac{9}{(\sqrt{3}+\sqrt{5})} \cdot \frac{(\sqrt{3}-\sqrt{5})}{(\sqrt{3}-\sqrt{5})} = \frac{9(\sqrt{3}-\sqrt{5})}{3-5} = \frac{9\sqrt{3}-9\sqrt{5}}{-2}$$

$$25. \frac{2\sqrt{3}}{4+\sqrt{3}} = \frac{2\sqrt{3}}{(4+\sqrt{3})} \cdot \frac{(4-\sqrt{3})}{(4-\sqrt{3})} = \frac{8\sqrt{3}-2\sqrt{3}^2}{16-3} = \frac{8\sqrt{3}-2 \cdot 3}{13} = \frac{8\sqrt{3}-6}{13}$$

$$26. \frac{5\sqrt{7}}{2-\sqrt{5}} = \frac{5\sqrt{7}}{(2-\sqrt{5})} \cdot \frac{(2+\sqrt{5})}{(2+\sqrt{5})} = \frac{5\sqrt{7}(2+\sqrt{5})}{4-5} = \frac{10\sqrt{7}+5\sqrt{35}}{-1} = -10\sqrt{7}-5\sqrt{35}$$

$$27. \frac{-5\sqrt{3}}{\sqrt{3}+\sqrt{7}} = \frac{-5\sqrt{3}}{(\sqrt{3}+\sqrt{7})} \cdot \frac{(\sqrt{3}-\sqrt{7})}{(\sqrt{3}-\sqrt{7})} = \frac{-5\sqrt{3}^2+5\sqrt{21}}{3-7} = \frac{-5 \cdot 3+5\sqrt{21}}{-4} = \frac{-15+5\sqrt{21}}{-4}$$

$$28. \frac{2+\sqrt{3}}{1+\sqrt{5}} = \frac{(2+\sqrt{3})}{(1+\sqrt{5})} \cdot \frac{(1-\sqrt{5})}{(1-\sqrt{5})} = \frac{2-2\sqrt{5}+\sqrt{3}-\sqrt{15}}{1-5} = \frac{2-2\sqrt{5}+\sqrt{3}-\sqrt{15}}{-4}$$

$$29. \frac{4-2\sqrt{5}}{3+\sqrt{6}} = \frac{(4-2\sqrt{5})(3-\sqrt{6})}{(3+\sqrt{6})(3-\sqrt{6})} = \frac{12-4\sqrt{6}-6\sqrt{5}+2\sqrt{30}}{9-6} = \frac{12-4\sqrt{6}-6\sqrt{5}+2\sqrt{30}}{3}$$

30.

$$\frac{2\sqrt{3}-5}{\sqrt{6}-\sqrt{2}} = \frac{(2\sqrt{3}-5)(\sqrt{6}+\sqrt{2})}{(\sqrt{6}-\sqrt{2})(\sqrt{6}+\sqrt{2})} = \frac{2\sqrt{18}+2\sqrt{6}-5\sqrt{6}-5\sqrt{2}}{6-2} = \frac{2\sqrt{2}\cdot 3^2-3\sqrt{6}-5\sqrt{2}}{4} =$$

$$\frac{6\sqrt{2}-3\sqrt{6}-5\sqrt{2}}{4} = \frac{\sqrt{2}-3\sqrt{6}}{4}$$