

Rationalizing Denominators - Notes

Simplify.

$$1) \frac{4}{\sqrt{80}} \cdot \frac{\sqrt{80}}{\sqrt{80}} = \frac{4\sqrt{80}}{80} \div 4$$

$$= \frac{\sqrt{80}}{20} = \frac{\sqrt{16 \cdot 5}}{20} = \frac{4\sqrt{5}}{20} \div 4$$

$$= \frac{\sqrt{5}}{5}$$

$$3) \frac{5}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{5\sqrt{6}}{6}$$

$$2) \frac{6}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{6\sqrt{7}}{7}$$

$$4) \frac{3}{\sqrt{8}} \cdot \frac{\sqrt{8}}{\sqrt{8}} = \frac{3\sqrt{8}}{8} = \frac{3\sqrt{4 \cdot 2}}{8} = \frac{3 \cdot 2\sqrt{2}}{8}$$

$$= \frac{6\sqrt{2}}{8} \div 2 = \frac{3\sqrt{2}}{4}$$

$$5) \frac{7}{9\sqrt{56}} \cdot \frac{\sqrt{56}}{\sqrt{56}} = \frac{7\sqrt{56}}{9 \cdot 56} = \frac{7\sqrt{56}}{504} \div 7$$

$$= \frac{\sqrt{56}}{72} = \frac{\sqrt{4 \cdot 14}}{72} = \frac{2\sqrt{14}}{72} \div 2 = \frac{\sqrt{14}}{36}$$

$$6) \frac{7}{8\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{7\sqrt{3}}{8 \cdot 3} = \frac{7\sqrt{3}}{24}$$

$$7) \frac{4}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{4\sqrt{7}}{7}$$

$$8) \frac{50}{\sqrt{30}} \cdot \frac{\sqrt{30}}{\sqrt{30}} = \frac{50\sqrt{30}}{30} \div 10 = \frac{5\sqrt{30}}{3}$$

$$9) \frac{5}{3\sqrt{8}} \cdot \frac{\sqrt{8}}{\sqrt{8}} = \frac{5\sqrt{8}}{3 \cdot 8} = \boxed{\frac{5\sqrt{8}}{24}}$$

$$10) -\frac{10}{10\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = -\frac{10\sqrt{2}}{10 \cdot 2} = -\frac{10\sqrt{2}}{20} \stackrel{\div 10}{=} -\frac{\sqrt{2}}{2} = \boxed{-\frac{\sqrt{2}}{2}}$$

$$11) \frac{10}{3\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{10\sqrt{6}}{3 \cdot 6} = \frac{10\sqrt{6}}{18} \stackrel{\div 2}{=} \frac{5\sqrt{6}}{9} = \boxed{\frac{5\sqrt{6}}{9}}$$

$$12) \frac{5}{6\sqrt{80}} \cdot \frac{\sqrt{80}}{\sqrt{80}} = \frac{5\sqrt{80}}{6 \cdot 80} = \frac{5\sqrt{80}}{480} \stackrel{\div 5}{=} \frac{\sqrt{80}}{96} = \frac{\sqrt{16 \cdot 5}}{96} = \frac{4\sqrt{5}}{96} \stackrel{\div 4}{=} \frac{\sqrt{5}}{24} = \boxed{\frac{\sqrt{5}}{24}}$$

$$13) \frac{7}{9\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{7\sqrt{6}}{9 \cdot 6} = \boxed{\frac{7\sqrt{6}}{54}}$$

$$14) \frac{9}{10\sqrt{60}} \cdot \frac{\sqrt{60}}{\sqrt{60}} = \frac{9\sqrt{60}}{10 \cdot 60} = \frac{9\sqrt{60}}{600} \stackrel{\div 3}{=} \frac{3\sqrt{60}}{200} = \frac{3\sqrt{4 \cdot 15}}{200} = \frac{3 \cdot 2\sqrt{15}}{200} = \frac{6\sqrt{15}}{200} \stackrel{\div 2}{=} \frac{3\sqrt{15}}{100} = \boxed{\frac{3\sqrt{15}}{100}}$$

$$15) \frac{20}{3\sqrt{14}} \cdot \frac{\sqrt{14}}{\sqrt{14}} = \frac{20\sqrt{14}}{3 \cdot 14} = \frac{20\sqrt{14}}{42} \stackrel{\div 2}{=} \frac{10\sqrt{14}}{21} = \boxed{\frac{10\sqrt{14}}{21}}$$

$$16) \frac{6}{7\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{6\sqrt{7}}{7 \cdot 7} = \boxed{\frac{6\sqrt{7}}{49}}$$