

Name: _____

n^{th} Roots and Rational Exponents

Write each expression in radical form

① $3^{\frac{5}{2}}$

② $10^{\frac{4}{3}}$

③ $(7b)^{\frac{2}{3}}$

④ $(7m)^{-\frac{5}{2}}$

⑤ $(b^2)^{\frac{1}{3}}$

⑥ $(7r)^{\frac{5}{2}}$

Write each expression in exponential form

⑦ $(\sqrt[4]{3p})^7$

⑧ $\frac{1}{\sqrt[6]{10}}$

⑨ $\frac{1}{(\sqrt[3]{3x})^4}$

⑩ $(\sqrt[5]{10x})^6$

⑪ $(\sqrt[5]{10})^3$

⑫ $\frac{1}{(\sqrt[3]{x})^2}$

Simplify

⑬ $\sqrt[3]{-250}$

⑭ $\sqrt[3]{375}$

⑮ $\sqrt[6]{384x^6y^5}$

⑯ $(125)^{\frac{4}{3}}$

⑰ $(216)^{\frac{2}{3}}$

⑱ $(32)^{\frac{3}{5}}$

Name: _____

n^{th} Roots and Rational Exponents

Answers

① $3^{\frac{5}{2}}$
 $\sqrt{3^5}$

② $10^{\frac{4}{3}}$
 $\sqrt[3]{10^4}$

③ $(7b)^{\frac{2}{3}}$
 $\sqrt[3]{(7b)^2}$

④ $(7m)^{-\frac{5}{2}}$
 $\frac{1}{\sqrt{(7m)^5}}$

⑤ $(b^2)^{\frac{1}{3}}$
 $\sqrt[3]{b^2}$

⑥ $(7r)^{\frac{5}{2}}$
 $\sqrt{(7r)^5}$

⑦ $(\sqrt[4]{3p})^7$
 $(3p)^{\frac{7}{4}}$

⑧ $\frac{1}{\sqrt[6]{10}}$
 $\frac{1}{10^{\frac{1}{6}}}$

⑨ $\frac{1}{(\sqrt[3]{3x})^4}$
 $\frac{1}{(3x)^{\frac{4}{3}}}$

⑩ $(\sqrt[5]{10x})^6$
 $(10x)^{\frac{6}{5}}$

⑪ $(\sqrt[5]{10})^3$
 $10^{\frac{3}{5}}$

⑫ $\frac{1}{(\sqrt[3]{x})^2}$
 $\frac{1}{x^{\frac{2}{3}}}$

⑬ $\sqrt[3]{-250}$
 $-5\sqrt[3]{2}$

⑭ $\sqrt[3]{375}$
 $5\sqrt[3]{3}$

⑮ $\sqrt[6]{384x^6y^5}$
 $2\sqrt[6]{6} x\sqrt[6]{y^5}$

⑯ $(125)^{\frac{4}{3}}$

 625

⑰ $(216)^{\frac{2}{3}}$

 36

⑱ $(32)^{\frac{3}{5}}$

 8