

## Class 1 | 1.1.08 | Powers with rational exponents

**Task 1.** Calculate:

(a)  $324^{0.5} =$

(b)  $0.0625^{0.25} =$

(c)  $1000^{1\frac{1}{3}} =$

(d)  $(0.01)^{-\frac{3}{2}} =$

(e)  $1024^{0.3} =$

(f)  $64^{-\frac{2}{3}} =$

(g)  $\left(\frac{9}{4}\right)^{\frac{-1}{2}} =$

(h)  $\left(\frac{8}{27}\right)^{-\frac{1}{3}} =$

**Task 2.** Calculate.

(a)  $\left(5^{\frac{1}{3}} \times 5^{-\frac{1}{2}} \div 5^{\frac{5}{6}}\right)^{-1} =$

(b)  $\left(6^{-0.9} \div 6^{-\frac{4}{5}} \times 6^{1.7}\right)^{\frac{5}{8}} =$

(c)  $\left(5^{\frac{1}{3}} \times 25^{-\frac{1}{2}} \div 0.2^{\frac{5}{6}}\right)^{-6} =$

(d)  $\left(0.25^{-0.9} \div 2^{-\frac{4}{5}} \times 8^{1.1} \times 2^{0.1}\right)^{0.5} =$

(e)  $\left[5^{\frac{1}{4}} \times (0.2)^{-\frac{3}{4}}\right]^{-3} =$

(f)  $\left\{\left(11^{\frac{1}{3}}\right)^2 \div 11^{-\frac{1}{3}} \times \frac{1}{11}\right\}^{20} \div 100^{0.5} =$

**Task 3.** Convert each of the following expressions to a power with integer base and rational exponent:

(a)  $\sqrt{125\sqrt{25\sqrt{5}}} =$

(b)  $\sqrt{8\sqrt{4 \times \sqrt[3]{2}}} =$

(c)  $\sqrt[3]{\sqrt[5]{\sqrt[4]{\sqrt{7}}}} = 7^{\frac{1}{60}}$

(d)  $\sqrt{7^3} \times \sqrt[3]{\sqrt{7}} =$

(e)  $3\sqrt{3} \times \sqrt[3]{3} \times \sqrt[4]{3} = 3^{2\frac{1}{12}}$

(f)  $\sqrt[5]{2^{11}} \div 2^3 \times \sqrt{2} =$

**Task 4.** Compare the two given numbers without using a calculator.

(a)  $\sqrt{5 + \sqrt{10}}$  and  $\sqrt{8}$

(b)  $\sqrt[3]{\sqrt{10}}$  and  $0.1^{-0.5} \div 10^{\frac{1}{3}}$