8. a) Write $26^{\frac{2}{5}}$ in radical form in 2 ways.

$\sqrt[5]{26^2}$ OR $\left(\sqrt[5]{26}\right)^2$

b) Write $\sqrt{6^5}$ and $\left(\sqrt[4]{19}\right)^3$ in exponent form.

$6^{\frac{5}{2}}$ $19^{\frac{3}{4}}$

9. Evaluate.

a) $(-27)^{\frac{4}{3}}$

$\left(\sqrt[3]{-27}\right)^4$

$(-3)^4 = 81$

b) $0.01^{\frac{3}{2}}$

$\left(\sqrt{0.01}\right)^3$

$=(0.1)^3$

$=0.001$

c) $81^{\frac{3}{4}}$

$\left(\sqrt[4]{81}\right)^3$

$=3^3$

$=27$

10. Evaluate each power.

a) $7^{-2} = \frac{1}{7^2}$

$\frac{1}{49}$

b) $\left(\frac{10}{3}\right)^{-3}$

$=\left(\frac{3}{10}\right)^3$

$=\frac{27}{1000}$

11. Evaluate each power.

a) $16^{-\frac{5}{4}}$

$\left(\frac{1}{16}\right)^{\frac{5}{4}}$

$\left(\sqrt[4]{\frac{1}{16}}\right)^5$

$=\left(\frac{1}{2}\right)^5 = \frac{1}{32}$

b) $\left(\frac{25}{36}\right)^{-\frac{1}{2}}$

$\left(\frac{36}{25}\right)^{\frac{1}{2}}$

$\sqrt{\frac{36}{25}}$

$=\frac{6}{5}$

CHALLENGE – A-Level Questions

12. Simplify. Explain your reasoning.

a) $(25a^4b^2)^{\frac{3}{2}}$

$\sqrt{25a^4b^2}$

$(5a^2b)^3$

$=125a^6b^3$

b) $\left(x^3y^{-\frac{3}{2}}\right)\left(x^{-1}y^{\frac{1}{2}}\right)$

$x^{3+(-1)}y^{-\frac{3}{2}+\frac{1}{2}}$

$=x^2y^{-\frac{2}{2}}$

$=\frac{x^2}{y^1}$

Foundations and Pre-Calculus Math 10 **Name:**_____

Chapter 4 Questions to help you study for your assessment

Please do these questions without your calculator but you may use your Perfect Squares/Cubes sheet.

1. Simplify by writing as a single power. Show your reasoning.

a) $(5a^5)^2$

$25a^{10}$

b) $0.8^2 \cdot 0.8^{-7}$

$0.8^{2+(-7)}$

0.8^{-5}

c) $\left[\left(-\frac{4}{5}\right)^2\right]^{-3} \div \left[\left(-\frac{4}{5}\right)^4\right]^{-5}$

$\left(\frac{-4}{5}\right)^{-6} \div \left(\frac{-4}{5}\right)^{-20} = \left(-\frac{4}{5}\right)^{-6(-20)}$

$= \left(\frac{-4}{5}\right)^{14}$

2. Simplify. Show your reasoning.

a) $m^4n^{-2} \cdot m^2n^3$

m^6n^1

b) $\frac{36x^4y^3}{24x^{-2}y}$

$\frac{3x^6y^2}{2}$

c) $a^{\frac{1}{5}} \times a^{\frac{1}{5}}$

$a^{\frac{2}{5}}$

3. .Tell whether each number is rational or irrational. Explain how you know.

a) $\sqrt{\frac{49}{16}}$

rational both numerator and denominator are square numbers, so can be written as a fraction

b) $\sqrt[3]{-30}$

irrational, -30 is not a perfect cube number

c) 1.21

rational, 1.21 is a terminating decimal number.

4. Simplify each radical.

a) $\sqrt{63}$

63 → 7, 9 → 3, 3

$= 3\sqrt{7}$

b) $\sqrt[3]{108}$

108 → 2, 54 → 6, 9 → 2, 3, 3, 3

$= 3\sqrt[3]{4}$

c) $\sqrt[4]{128}$

$= 2\sqrt[4]{8}$

5. Write each radical in simplest form, if possible.

a) $\sqrt{30}$

not possible, 30 does not have any factors which are square numbers

b) $\sqrt[3]{32}$

32 → 2, 16 → 2, 8

$= 2\sqrt[3]{4}$

c) $\sqrt[4]{48}$

48 → 3, 16 → 2, 8 → 2, 4 → 2, 2

cube! number!

$= 2\sqrt[4]{3}$

6. Write each mixed radical as an entire radical.

a) $7\sqrt{3}$

$\sqrt{49 \times 3}$

$= \sqrt{147}$

b) $2\sqrt[3]{4}$

$\sqrt[3]{8 \times 4}$

$= \sqrt[3]{32}$

c) $2\sqrt[5]{3}$

$\sqrt[5]{32 \times 3}$

$= \sqrt[5]{96}$

25

7. Evaluate each power.

a) $1000^{\frac{1}{3}}$

$\sqrt[3]{1000}$

$= 10$

b) $0.25^{\frac{1}{2}}$

$\sqrt{0.25}$

$= 0.5$

c) $(-8)^{\frac{1}{3}}$

$\sqrt[3]{-8}$

$= -2$

d) $\left(\frac{16}{81}\right)^{\frac{1}{4}}$

$\sqrt[4]{\frac{16}{81}}$

$= \frac{2}{3}$