

2 Classwork 2 MAT 1275 Professor Chiu

Name: Sed.

- This classwork consists of 2 questions.
- Show all work and justify your answers.
- Scientific calculators are allowed.
- Wishing you success.

1. Simplify and write your answers with positive exponents:

① Observation

$$\left(\frac{a}{b}\right)^{-2} = \left(\left(\frac{a}{b}\right)^{-1}\right)^2$$

$$= \left(\frac{b}{a}\right)^2$$

$$\left(\frac{a}{b}\right)^{-1} = \text{reciprocal of } \frac{a}{b} = \frac{b}{a}$$

② answer

$$\left(\frac{x^6 \cdot y^4}{y^6 \cdot x^2}\right)^{-2} = \left(\frac{y^6 \cdot x^2}{x^6 \cdot y^4}\right)^2 = \left(\frac{x^2 y^6}{x^6 y^4}\right)^2$$

$$= \left(\frac{x^2}{x^6} \cdot \frac{y^6}{y^4}\right)^2 = \left(x^{2-6} \cdot y^{6-4}\right)^2$$

$$= \left(x^{-4} \cdot y^2\right)^2 = x^{-4 \cdot 2} y^{2 \cdot 2}$$

$$= x^{-8} y^4$$

2. Divide and write your answers in Scientific Notation:

① Observation:

• $1.8 < 6.0$

• For Scientific Notation

$$a \times 10^b, \quad 1 \leq a < 10$$

• $\frac{1.8 \times 10^9}{6.0 \times 10^{11}} = \frac{1.8}{6.0} \times \frac{10^9}{10^{11}}$

• $\frac{10^9}{10^6} = 10^{9-6}$

$$\frac{1.8 \times 10^9}{6.0 \times 10^{11}}$$

② answer

$$= \frac{1.8}{6.0} \times \frac{10^9}{10^{11}}$$

$$= 0.3 \times 10^{9-11} = 0.3 \times 10^{-2}$$

$$= 3 \times 10^{-1} \times 10^{-2} = 3 \times 10^{-3}$$

($0.3 = 3 \times 10^{-1}$)
 → move the decimal to the right once