Alg 2 Hwk #30 Rules of Exponents Review Fall 2018 Name:

Rules of Exponents:

Zero as an exponent: $\boxed{a^0 = 1}$ anything(except 0) raised to the zero power equals 1.

One as a exponent: $\boxed{a^1 = a}$ anything raised to the first power is itself.

Negative exponents: $\boxed{a^{-n} = \frac{1}{a^n}}$ reciprocal.

Product of Powers: $\boxed{a^n \cdot a^m = a^{n+m}}$ add exponents.

Power to a Power: $\boxed{(a^n)^m = a^{nm}}$ multiply exponents.

Quotient of Powers: $\boxed{\frac{a^n}{a^m} = a^{n-m}}$ subtract exponents.

Power of a Product and Power of a Quotient: $\boxed{(a^n b^m)^x = a^{nx} \cdot b^{mx}}$ & $\boxed{\left(\frac{a^n}{b^m}\right)^x = \frac{a^{nx}}{b^{mx}}}$ everything inside the parentheses is raised to the power that is outside.

Simplify each expression. Make sure answers don't contain any exponents that are zero or negative. Circle your answers.

1. $-9b^{-2}c^0d^{-1}$

2. $(8c^4)^2$

3. $\frac{9Q^8M^{-5}}{3Q^2M^{-3}}$

4. $(4x^3z^5)(5xz^{-8})$

5. $\frac{6g^{-3}k^0}{24j^8m^{-5}}$

6. $(5a^{-6}b^5)^2(2a^4b^{-2})^3$

7. $\left(\frac{6g^4h^{-5}}{2g^{-2}h^3}\right)^3$

8. $\left(\frac{c^{-4}d^2}{cd^6}\right)^{-2}$