Exponent Laws

1. Express each as a single power if possible and then evaluate.

   a. 5×5^4

   b. $(-5)^2 \times (-5)^3$

   c. $6^2 \times 6^4$

   d. $(-2)^3 \times (-2)^2 \times (-2)^4$

   e. $2^5 \times (-2)^3$

   f. $(-7)^4 \times (-7)^2$

2. Express each as a single power if possible and then evaluate.

   a. $\dfrac{2^4}{2}$

   b. $4^3 \div 4^2$

   c. $\dfrac{(-6)^3}{(-6)}$

   d. $(-4)^5 \div (-4)^2$

   e. $\dfrac{5^3}{5}$

   f. $\dfrac{(-4)^2}{4}$

3. Express each as a single power if possible and then evaluate.

   a. $(3^3)^2$

   b. $\left((-3)^2\right)^4$

   c. $\left(-3^3\right)^3$

   d. $\left(7^2\right)^2$

   e. $\left(-1^5\right)^{10}$

   f. $-(2^4)^3$

4. Evaluate each of the following:

   a. $(4^2 \times 3^2)^2$

   b. $(2^2 \times 5^2)^3$

   c. $[(-4)^2 \times (-3)^2)^2$

   d. $[(-3)^2 \times 2^4)^2$

   e. $-[5^3(-2)^2)^2$

5. Evaluate each of the following:

   a. $\left(\frac{5}{6}\right)^3$

   b. $\left(\frac{2^3}{5}\right)^2$

   c. $\left(\frac{3}{(-2)^2}\right)^4$

   d. $\left(-\frac{4^3}{3^2}\right)^2$

   e. $-\left(\frac{(-4)}{(-2)^3}\right)^4$

6. Evaluate each of the following:

   a. 5^0

   b. -5^0

   c. $(-5)^0$

   d. $\left(\frac{4^0}{3^2}\right)^2$

   e. $-\left(\left(\frac{(-4)^5}{(-2)^4}\right)^7\right)^0$

   f. $[(-5)^0 \times 3^2 \times 2]^2$

Answers

1a) $5^5 \rightarrow 3125$

1b) $(-5)^5 \rightarrow -3125$

1c) $6^6 \rightarrow 46656$

1d) $(-2)^9 \rightarrow -512$

1e) $32 \times (-8) \rightarrow -256$

1f) $(-7)^6 \rightarrow 117649$

2a. $\frac{2^4}{2} \rightarrow 2^3 \rightarrow 8$

2b. $4^3 \div 4^2 \rightarrow 4^1 \rightarrow 4$

2c. $\frac{(-6)^3}{(-6)} \rightarrow (-6)^2 \rightarrow 36$

2d. $(-4)^5 \div (-4)^2 \rightarrow (-4)^3 \rightarrow -64$

2e. $\frac{5^3}{5} \rightarrow 5^2 \rightarrow 25$

2f. $\frac{(-4)^2}{4} \rightarrow \frac{16}{4} \rightarrow 4$

3a. $3^6 \rightarrow 729$

3b. $(-3)^8 \rightarrow 6561$

3c. $(-1)(3)^9 \rightarrow -19683$

3d. $7^4 \rightarrow 2401$

3e. $(-1)(1)^{50} \rightarrow -1$

3f. $(-1)(2)^{12} \rightarrow -4096$

4a. 20736

4b. 1000000

4c. 20736

4d. 20736

4e. -250000

5a. $\frac{125}{216}$

5b. $\frac{64}{25}$

5c. $\frac{81}{256}$

5d. $\frac{4096}{81}$

5e. $-\frac{1}{16}$

6a. 1

6b. -1

6c. 1

6d. $\frac{1}{81}$

6e. -1

6f. 324