



Name: _____ Class: M 2/ _____ Number: _____

Worksheet 3 Exponents (continuous)**Simplify the following.**

9) $\frac{3 \times 2^{n+1} - 4 \times 2^{n-2}}{2^n - 2^{n-1}}$

$$= \frac{3 \times 2^{n+1} - 2 \times 2^{n-1}}{2^n - 2^{n-1}}$$

$$= \frac{3 \times 2^{n+1} - 2 \times 2^{n-1}}{2^n - 2^{n-1}}$$

$$= \frac{2^n (3 \times 2 - 1)}{2^n (2 - 1)}$$

$$= \frac{2^n (6 - 1)}{2^n (1)}$$

$$= 10$$

11) $2^{2^{2^2}}$

$$= 2^{2^2}$$

$$= 2^4$$

10) $8^{\frac{2}{3}} - 3x^0 + (3y)^0 + (3^3)^{-\frac{1}{3}} - 1^{100}$

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

$$= 2^{\frac{2}{3}} - 3 + 1 + \frac{1}{3} - 1$$

$$= \frac{2^{\frac{2}{3}} - 2}{3}$$

12) $9 \left(3^{2^{2^2}} \right)$

$$= 9 \left(3^{2^2} \right)$$

$$= 9 \left(3^4 \right)$$

$$= 3^6 \left(3^4 \right)$$

$$= 3^{10}$$



$$13) \frac{1}{16}a^0 + \left(\frac{1}{16}\right)^0 - 64^{-\frac{1}{2}} - (32)^{-\frac{4}{5}}$$

$$= \frac{1}{16}(\underline{\hspace{2cm}}) + \underline{\hspace{2cm}} - 2^{\underline{\hspace{2cm}}} \times 2^{-\frac{1}{2}} - 2^{\underline{\hspace{2cm}}} \times 2^{-\frac{4}{5}}$$

$$= \frac{1}{16} + \underline{\hspace{2cm}} - 2^{\underline{\hspace{2cm}}} - 2^{\underline{\hspace{2cm}}}$$

$$= \frac{1}{16} + \underline{\hspace{2cm}} - \frac{1}{\underline{\hspace{2cm}}} - \frac{1}{\underline{\hspace{2cm}}}$$

$$= \underline{\hspace{2cm}}$$

$$14) \left(2(2(-2)^{-2})^{-2}\right)^{-1}$$

$$= 2^{-1} \times (2(-2)^{-2})^{-2(-1)}$$

$$= 2^{-1} \times (2(-2)^{-2})^{\underline{\hspace{2cm}}}$$

$$= 2^{-1} \times 2^{\underline{\hspace{2cm}}} \times (-2)^{-2(\underline{\hspace{2cm}})}$$

$$= 2^{-1} \times 2^{\underline{\hspace{2cm}}} \times 2^{\underline{\hspace{2cm}}}$$

$$= \frac{1}{2^{\underline{\hspace{2cm}}}}$$

$$15) 3^{-x} (3^x + 3^{x+1} + 3^{x+2})$$

$$= 3^{-x} \times 3^x (\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 3^{\underline{\hspace{2cm}}})$$

$$= \underline{\hspace{2cm}}$$

$$16) \left(\frac{a^{-2}b}{a^3b^{-4}}\right)^{-3} \times \left(\frac{ab^{-1}}{a^{-3}b^2}\right)^5$$

$$= \left(\frac{b^{\underline{\hspace{2cm}}}}{a^{\underline{\hspace{2cm}}}}\right)^{-3} \times \left(\frac{a^{\underline{\hspace{2cm}}}}{b^{\underline{\hspace{2cm}}}}\right)^5$$

$$= \frac{b^{\underline{\hspace{2cm}}}}{a^{\underline{\hspace{2cm}}}} \times \frac{a^{\underline{\hspace{2cm}}}}{b^{\underline{\hspace{2cm}}}}$$

$$= \frac{a^{\underline{\hspace{2cm}}}}{b^{\underline{\hspace{2cm}}}}$$