

Rewriting Exponential Expressions

Name: _____ Period: _____ Date: _____

Rewrite each exponential expression so that the only term in the exponent is x.

1. $f(x) = 2(3)^{x+2}$	2. $g(x) = 4(2)^{x-1}$
3. $h(x) = 9\left(\frac{1}{3}\right)^{x+3}$	4. $k(x) = \frac{1}{8}\left(\frac{1}{4}\right)^{x-2}$
5. $m(x) = 2(5)^{2x}$	6. $p(x) = 4(2)^{-3x}$
7. $q(x) = -4\left(\frac{1}{2}\right)^{4x}$	8. $f(x) = \frac{1}{5}(3)^{-4x}$
9. $f(x) = 2(3)^{2x+2}$	10. $g(x) = 32(4)^{3x-6}$
11. $h(x) = -3\left(\frac{1}{4}\right)^{4x+12}$	12. $k(x) = \frac{1}{32}\left(\frac{1}{4}\right)^{-2x+4}$

Examples:

$$\begin{aligned} 1.) f(x) &= 6(3)^{x-1} \\ &= 6(3)^x(3)^{-1} \\ &= 6\left(\frac{1}{3}\right)(3)^x \\ &= 2(3)^x \end{aligned}$$

$$\Rightarrow 3^{-1} = \frac{1}{3}$$

Rewrite to put
into standard form:
 $f(x) = a(b)^x$

$$\begin{aligned} 2.) h(x) &= 4(2)^{3x} \\ &= 4(2^3)^x \\ &= 4(8)^x \end{aligned}$$

$$\begin{aligned} 3.) m(x) &= 6(4)^{2x+2} \\ &= 6(4)^{2(x+1)} \\ &= 6(4^2)^{x+1} \\ &= 6(16)^{x+1} \\ &= 6(16)^x(16)^1 \\ &= 6(16)(16)^x \\ &= 96(16)^x \end{aligned}$$