# Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_

## **Unit 16 Review**

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| **Evaluate the following.** |
| 1. $\left(4^{2}\right)^{4}=$
 | 1. $\frac{2^{4}}{2}=$
 |
| 1. $2∙2^{2}∙2^{3}=$
 | 1. $2^{-2}∙2^{3}=$
 |
| 1. $\left(4^{-3}\right)^{4}=$
 | 1. $\frac{4^{3}}{4^{-1}}=$
 |
| 1. $\frac{4^{2}∙4^{-1}}{4}=$
 | 1. $\left(2∙2^{3}\right)^{3}=$
 |
| 1. $\frac{\left(2^{3}\right)^{4}}{2^{2}}=$
 | 1. $\frac{2^{2}∙2^{4}}{\left(2^{2}\right)^{-4}}=$
 |
| **Simplify the following. Your answer should contain only positive exponents.** |
| 1. $x^{4}∙2x^{3}=$
 | 1. $\left(3x^{4}\right)^{2}=$
 |
| 1. $\frac{3x^{2}}{4x^{4}}=$
 | 1. $\frac{2x^{0}}{x^{-4}}=$
 |
| 1. $\left(x^{2}\right)^{4}=$
 | 1. $3x^{-1}∙4x^{2}=$
 |
| 1. $3xy^{4}∙3x^{4}y=$
 | 1. $\left(3x^{3}y^{3}\right)^{4}=$
 |
| 1. $\frac{4x^{3}y^{0}}{4x^{2}y^{3}}=$
 | 1. $\frac{2x^{2}y^{4}}{4x}=$
 |
| 1. $\left(x^{2}y^{-2}\right)^{2}=$
 | 1. $3x^{4}y^{0}∙2x^{3}y^{3}=$
 |
| 1. $x^{4}y^{2}∙\left(x^{-2}\right)^{0}=$
 | 1. $\frac{4x^{2}y^{-4}∙3xy^{-1}}{3x^{2}}=$
 |
| 1. $\frac{x^{4}}{\left(x^{-3}y^{2}\right)^{2}}=$
 | 1. $\left(\frac{x^{0}∙2x^{-1}y^{-3}}{2x^{4}y^{4}}\right)^{-3}=$
 |
| 1. $\left(-2x^{4}y^{3}z\right)^{2}∙\left(4x^{7}y^{3}z\right)=$
 | 1. $\left(-3x^{6}y^{7}z\right)^{3}∙\left(6x^{2}y^{4}z\right)=$
 |

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| **Use the laws of exponents to solve the following equations.** |
| 1. $3^{3x-2}∙3^{-2x}=3^{2}$
 | 1. $\frac{2^{-x}}{2^{-2x-3}}=2^{3-2x}$
 |
| 1. $8^{3}∙8^{2x}=8^{7}$
 | 1. $\frac{8^{3}}{8^{x}}=8^{5}$
 |
| 1. $\left(3^{x}\right)^{3}=3^{12}$
 | 1. $\left(3^{x}\right)^{2}∙3^{4}=3^{8}$
 |
| **Solve the following compound interest problems using the formula** $A=P\left(1+\frac{r}{n}\right)^{nt}$**.** |
| 1. If a person deposits $\$5000$ into an account that pays $10.25\%$ interest compounded semiannually, how much will they have after $8$ years?
 |
| 1. If a person wants to have $\$9000$ after $10$ years, how much would they have to deposit into an account that pays $8.5\%$ interest compounded monthly?
 |
| 1. If a person deposits $\$500$ into an account that pays $7.5\%$ compounded quarterly, how much will they have after $20$ years?
 |
| 1. If a person wants to have $\$2000$ after $4$ years, how much would they have to deposit into an account that pays $6.5\%$ interest compounded monthly?
 |

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| **Review** |
| 1. Graph the equation. Then, use the graph to find the following. $f\left(x\right)=-x^{2}+4x-4$

Vertex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Axis of Symmetry:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Max or Min: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ x-intercepts:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |

**Answers**

$$16384$$

$$4096$$

$$\frac{1}{16777216}$$

$$1024$$

$$65536$$

$$Max$$

$$9x^{5}y^{5}$$

$$2$$

$$\left(2, 0\right)$$

$$y\geq 0$$

$$R$$

$$y=0$$

$$x=2$$

$$\left(2, 0\right)$$

$$1543.19$$

$$2209.94$$

$$3858.28$$

$$11124.13$$

$$2$$

$$6$$

$$-2$$

$$2$$

$$0$$

$$4$$

$$16x^{5}y^{9}z^{3}$$

$$-162x^{20}y^{25}z^{4}$$

$$x^{15}y^{21}$$

$$\frac{x^{10}}{y^{4}}$$

$$\frac{4x}{y^{5}}$$

$$x^{4}y^{2}$$

$$6x^{7}y^{3}$$

$$\frac{x^{4}}{y^{4}}$$

$$\frac{xy^{4}}{2}$$

$$\frac{x}{y^{3}}$$

$$81x^{12}y^{12}$$

$$12x$$

$$x^{8}$$

$$2x^{4}$$

$$\frac{3}{4x^{2}}$$

$$9x^{8}$$

$$2x^{7}$$

$$1$$

$$256$$

$$64$$

$$8$$