# Review Key

**Integrated Honors**
**Chapter 10: Review**

Name _____ *Key* 😊

Period _____

1. Simplify.

   a. $(-2b^{-2}c^3)^3$

   b. $(4d^2t^5v^{-4})(-5dt^{-3}v^{-1})$

   c. $(2x)^2(4y)^2$

   a. $\dfrac{-8c^9}{b^6}$

   b. $\dfrac{-20d^3t^2}{v^5}$

   c. $64x^2y^2$

2. Simplify.

   a. $\dfrac{12m^8y^6}{-9my^4}$

   b. $\left(\dfrac{2x^{-2}y^2}{-x^{-3}y^5}\right)^{-2}$

   a. $\dfrac{4m^7y^2}{-3}$

   b. $\dfrac{y^6}{4x^2}$

   $2^{-2} = \dfrac{1}{2^2} = \dfrac{1}{4}$

   $\dfrac{2^{-2}x^4y^{-4}}{(-1)^{-2}x^6y^{-10}} = \dfrac{1}{4}\dfrac{y^{10}}{x^2y^4}$

   $\boxed{\dfrac{y^6}{4x^2}}$

3. $(6m+4n)(6m-4n)$

   $36m^2 - 24mn - 24mn + 16n^2$

   $36m^2 - 48mn + 16n^2$

4. $(-4x^4y^{-6})^{-2}(2x^{-2}y^9)^3$

   $(-4)^{-2}x^{-8}y^{12} \cdot (2)^3 \cdot x^{-6} \cdot y^{27} = \dfrac{8y^{39}}{16x^{14}}$

   $\dfrac{1}{4^2}\dfrac{y^{12}}{x^8} \cdot \dfrac{8y^{27}}{x^6}$

   $= \boxed{\dfrac{y^{39}}{2x^{14}}}$

3. _____    4. _____

5. The following model represents what type of function?  What is the equation?

A.

| x | y |
|---|---|
| 0 | .25 |
| 1 | 1.25 |
| 2 | 6.25 |
| 3 | 31.25 |

*×5 constant mult!*
*×5*
*×5*

*exponential!*
$y = a \cdot b^x$
$y = 0.25(5)^x$

B.

| x | y |
|---|---|
| 0 | -9 |
| 1 | -15 |
| 2 | -21 |
| 3 | -27 |
| 4 | -33 |

*+1 −6*
*+1 −6*
*+1 −6*
*+1 −6*

*constant subtraction...linear*
$y = mx + b$
$y = -6x - 9$

6. A used car is purchased for $8,400.  It depreciates (loses value) by 12% of its value each year.

a. Determine the value of the car each year for 4 years after the purchase (make a table!).
b. Find the function that models that car's depreciation.
c. The car's owner plans to keep the car until it reaches $3,000.  Use a graph to find how many years it will take until the car's value falls below $3,000.  (assume that it continues to depreciate 12% each year)
d. Does the graph of the car's value have an asymptote?

*a) years from purchase (x)   value (y)*

| years from purchase | value |
|---|---|
| 0 | 8400 |
| 1 | 7,392 |
| 2 | 6,505 |
| 3 | 5,724 |

*(B)* $y = 8400(1 - .12)^x$
$y = 8400(.88)^x$

*(C)* on calc ... $Y_1 = 8400(.88)^x$
$Y_2 = 3,000$

Review-Test Page 2

| |
|---|
| 6,000 |
| 5,724 |
| 5,037 |

(C) on calc ... $Y_1 = 8400(.88)^x$
$Y_2 = 3,000$
Find Intersection
(my window was: X: [0,10]
Y: [2000, 6,000] )

**8.69 years**

a. The x-axis

large (# of years), the cars value approaches zero, but never touches because $y = 8400(0.88)^x$ can never equal zero... just get really close!
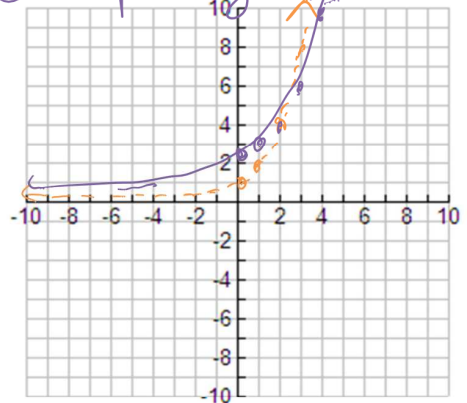
9. **Make a table and graph the parent AND transformed function (on the same table and same graph): (4 pts)**
   Parent function: $y = 2^x$     Transformed function: $y = 2^{x-1} + 2$  ← up 2 (y + 2)

$\frac{x+1}{}$
0
1
2
3
4

Rt.
1
$(x+1)$

| x | f(x) | y + 2 |
|---|------|-------|
| -1 | $\frac{1}{2}$ | 2.5 |
| 0 | 1 | 3 |
| 1 | 2 | 4 |
| 2 | 4 | 6 |
| 3 | 8 | 10 |



10. **Write in scientific notation:**

A] 0.0000067

$6.7 \times 10^{-6}$

B] 4766000

$4.766 \times 10^6$

C] 3500000 x 2000000

$3.5 \times 10^6 \times 2.0 \times 10^6$
$(3.5 \times 2)(10^6 \cdot 10^6)$
$\boxed{7.0 \times 10^{12}}$

D] 20000000 ÷ 500

$\frac{2.0 \times 10^7}{5 \times 10^2}$
$.4 \times 10^5$
$\boxed{4.0 \times 10^4}$