[6-1] E Negative Exponents

x	y
-3	$\frac{1}{8} = 2^{-3} = \frac{1}{2^3}$
-2	$\frac{1}{4} = 2^{-2} = \frac{1}{2^2}$
-1	$\frac{1}{2} = 2^{-1} = \frac{1}{2^1}$
0	$1 = 2^0$
1	$2 = 2^1$
2	$4 = 2^2$
3	$8 = 2^3$
4	$16 = 2^4$
5	$32 = 2^5$

$x^0 = 1$

$a^{-n} = \frac{1}{a^n}$

$\frac{1}{x^{-n}} = x^n$

① $10^{-2} = \frac{1}{10^2} = \boxed{\frac{1}{100}}$

② $5^{-1} = \frac{1}{5^1} = \boxed{\frac{1}{5}}$

③ $8^0 = \boxed{1}$

④ $-6^0 = \boxed{-1}$

⑤ $\frac{x^{-4}}{y^{-2}} = \boxed{\frac{y^2}{x^4}}$

⑥ $\frac{x^{-6}}{y^5 z^{-2}} = \boxed{\frac{z^2}{x^6 y^5}}$

⑦ $\frac{x^{-6}}{x^{-4}} = \frac{x^4}{x^6} = \frac{1}{x^2}$ or $\frac{x^{-6}}{x^{-4}} = x^{-6-(-4)} = x^{-2} = \frac{1}{x^2}$

⑧ $\frac{u^{-3}}{u^7} = \frac{1}{u^3 \cdot u^7} = \boxed{\frac{1}{u^{10}}}$ or $u^{-10} = \frac{1}{u^{10}}$

⑨ $\left(\frac{x^{-4}}{y^2}\right)^{-2} = \frac{x^8}{y^{-4}} = \boxed{x^8 y^4}$

[6-1] E Negative Exponents

In Exercises 1–12, simplify. Give your answers using positive exponents.

Remember:
$x^{-n} = \frac{1}{x^n}$ and $\frac{1}{x^{-n}} = x^n$

1. y^{-3}
2. x^{-5}
3. $3x^{-4}$
4. $2y^{-2}$
5. $\frac{1}{x^{-4}}$
6. $\frac{1}{4x^{-3}}$
7. $\frac{8}{4y^{-2}}$
8. $6x^{-2}y^4$
9. $12x^{-4}y^{-1}$
10. $\frac{x^{-3}}{9}$
11. $3y^2y^{-5}$
12. $\frac{1}{8x^{-3}y^4}$
13. 4^{-3}
14. 2^{-5}
15. $7^0 \cdot 7^2$
16. 5^{-3}
17. $6^4 \cdot 6^{-3}$
18. $(-8)^{-2} \cdot 8^2$
19. $3^{-2} \cdot 3^5$
20. $2^0 \cdot 2^{-2}$
21. $\frac{4^2}{4^{-2}}$
22. $\left(\frac{3^{-2}}{3^{-3}}\right)^0$
23. $\frac{5^{-4} \cdot 5^2}{5^2}$
24. $(3^{-2})^2$
25. $\frac{(3^{-2} \cdot 2^3)^{-1}}{3^{-1}}$
26. $\left(\frac{2}{3}\right)^{-1}$
27. $\left(\frac{1}{2^{-3}}\right)^2$

#18-27 need work shown.

(18)

This Review is very similar to the quiz tomorrow.

Name: _____

Date: _____

[6-1] sections A-D

Review

Simplify. Put a rectangle around your answer.

1) -8^2

2) $(-6)^2$

3) $(6-1)^3$

4) $x^4 \cdot x^8$

5) $(2a^4b^3)(-4ab^3)(-2ab^3)$

6) $\left(\frac{2x^3y}{3}\right)\left(\frac{15xy^3}{14}\right)$

7) $(10x)(2x^4) + (5x^3)(6x^2)$

8) $8x - y + 2x - 9y$

9) $(4c^2 - 3cd - 5d^2) - (-c^2 + 6cd - 2d^2)$

10) $(x^2)^3$

11) $(5xy^3)^2$

12) $(y^2)^4 \cdot (y^3)^5$

Evaluate each expression if w = 5, x = 2 and y = -1.

13) $3x + y^2$

14) $(4x + y)^2$

15) $2w^2$