Algebra II Practice A.APR.D.6: Expressions with Negative Exponents 2

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Simplify:

1. $(3.4)^0$

2. $x^{-5} \cdot x^{-3}$

3. $a^{-6}(a^4)(a^{-5})$

4. $\dfrac{x^{-7}}{x^{-9}}$

5. $\dfrac{c^{-8}d^{-9}}{e^{-2}}$

6. $\dfrac{2x^3y^{-3}}{4x^7y^2}$

7. $\dfrac{4^{-1}a^2b^{-7}}{4^2(ab)^{-4}}$

8. Simplify. Write the answer with all exponents positive. $\left(\dfrac{4x^{-5}p^5}{y^{-4}}\right)^{-2}\left(\dfrac{y^3p^4}{x^4}\right)^{-2}$

9. Choose a fraction to use as a value for the variable a. Find the values of a^{-3} and a^3. What is true about $a^{-3} \cdot a^3$?

10. Evaluate $x^2 - 2y^2 + 2(y-x)\left(2x^2 + 5xy^4 + 5y^2\right)^0$ if $x = 1$ and $y = 1$.

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11. Copy and complete the table.

a	1	2			10	
$2a^{-1}$	2	1	$\frac{2}{3}$	0.25		$\frac{1}{8}$

12. Solve: $2(x - x^0 + 3) = 2(2x - 1)$

Simplify:

13. $\dfrac{x^{-5} - 9xy^{-3}}{-5x^{-6} + x^{-5}y^{-4}}$

14. $\dfrac{x^{-2} + 3xy^{-1}}{7x^{-3} - x^{-2}y^{-2}}$

15. $(x + 4y)(xy^{-1} - 16x^{-1}y)^{-1}$

16. $(x + 3y)(xy^{-1} - 9x^{-1}y)^{-1}$

17. Simplify. Write the answer as a simple fraction with all exponents positive.

$\dfrac{m^{-1} + n^2m^{-2}}{m^{-1}n^4}$

18. Simplify. Write the answer as a simple fraction with all exponents positive.

$\dfrac{c^{-2} + d^3c^{-3}}{c^{-2}d^5}$

Simplify:

19. $\dfrac{x + 4y}{xy^{-1} - 16x^{-1}y}$

20. $\dfrac{x - 9y}{xy^{-1} - 81x^{-1}y}$

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[1] 1

[2] $\frac{1}{x^8}$

[3] $\frac{1}{a^7}$

[4] x^2

[5] $\frac{e^2}{c^8 d^9}$

[6] $\frac{1}{2x^4 y^5}$

[7] $\frac{a^6}{64b^3}$

[8] $\frac{x^{18}}{16y^{14}p^{18}}$

[9] Answers may vary. Sample: Let $a = \frac{3}{4}$. Then $\left(\frac{3}{4}\right)^3 = \frac{27}{64}$ and $\left(\frac{3}{4}\right)^{-3} = \left(\frac{4}{3}\right)^3 = \frac{64}{27}$. So $a^{-3} \cdot a^3 = \frac{27}{64} \cdot \frac{64}{27} = 1.$

[10] -1

[11]

a	1	2	3	8	10	16
$2a^{-1}$	2	1	$\frac{2}{3}$	0.25	$\frac{1}{5}$	$\frac{1}{8}$

[12] 3

[13] $\frac{xy^4 - 9x^7 y}{-5y^4 + x}$

[14] $\frac{xy^2 + 3x^4 y}{7y^2 - x}$

[15] $\frac{xy}{x - 4y}$

[16] $\frac{xy}{x - 3y}$

[17] $\frac{m + n^2}{mn^4}$

[18] $\frac{c + d^3}{cd^5}$

[19] $\frac{xy}{x - 4y}$

[20] $\frac{xy}{x + 9y}$