

Agenda

- 1) Take out HW to be checked
- 2) Check HW Answers
- 3) DO NOW
- 4) Simplifying Expressions with Exponents
- 5) Recall: Fraction Rules
- 6) Rational Expressions with Function Operations

Homework: "Mixed Review" Worksheet

DO NOW

<p>1) $42^x = 1$ What is x?</p> <p style="text-align: center;">$x = \underline{\hspace{2cm}}$</p>	<p>2) $a^4 \cdot a^5$</p>
<p>3) $(a^4)^5$</p>	<p>4) $2^x = \frac{1}{8}$ What is x?</p> <p style="text-align: center;">$x = \underline{\hspace{2cm}}$</p>
<p>5) $\left(\frac{2}{3}\right)^{-3}$</p>	<p>6) $49^{\frac{1}{2}}$</p>
<p>7) $(\sqrt[4]{x})^5$</p>	<p>8) $a^4 + a^5$</p>
<p>9) $27^{\frac{1}{3}}$</p>	<p>10) $(a+1)^2$</p>
<p>11) $\frac{a^7}{a^3}$</p>	<p>12) $\frac{a^3}{a^7}$</p>

Part I: Simplifying Expressions with Exponents

$$\text{Ex 1. } \frac{(x)^3}{(x)^2} = \frac{(x)(x)(x)}{(x)(x)} = x$$

$$\text{Ex 2. } \frac{(x+1)^3}{(x+1)^2} = \frac{\cancel{(x+1)}\cancel{(x+1)}(x+1)}{\cancel{(x+1)}\cancel{(x+1)}} = x+1$$

So same rules apply as when to subtract exponents.

Practice:

$$1. \frac{2x}{x^2}$$

$$2. \frac{(x+2)^4}{(x+2)^2}$$

$$3. \frac{2(x-5)^3}{(x-5)^4}$$

$$4. \frac{x^{18}}{x^{19}}$$

$$5. \frac{25(x+12)^{13}}{5(x+12)^{14}}$$

$$6. \frac{25(x+12)^{13}}{5(x+12)^{14}}$$

$$7. \frac{x^2 y}{x^2 z}$$

$$8. \text{ True or False: } \frac{x+4}{x+2} = \frac{\cancel{x}+4}{\cancel{x}+2} = \frac{4}{2} = 2$$

Show why or why not. (*Hint*: substitute in value for x .)

Recall: Fraction Rules

Multiplying Notes	Examples
$\frac{(\textit{numerator}) \cdot (\textit{numerator})}{(\textit{denominator}) \cdot (\textit{denominator})}$ <ul style="list-style-type: none"> • Reduce if possible 	$\frac{3}{2} \cdot \frac{4}{9} =$
Dividing Notes	Examples
<ul style="list-style-type: none"> • Change fraction being divided to reciprocal • Change operation to multiplication • Multiply new fractions 	$\frac{5}{2} \div \frac{10}{8} =$
Adding & Subtracting Notes	Examples
<ul style="list-style-type: none"> • Create a common denominator • New denominator should be the Least Common Multiple of the old denominators • Add numerators • Leave New denominator the same 	$\frac{3}{2} + \frac{4}{9} =$

Part II: Rational Expressions with Function Operations

Let $m(x) = \frac{1}{2x}$, $r(x) = \frac{3}{x}$, $h(x) = \frac{1}{x+1}$, and $a(x) = \frac{x}{x+1}$

1. What are domain restrictions for $m(x)$ and $a(x)$? (What can the x -value not be?)

Perform the following operations.

2. $m(x) \cdot a(x)$

3. $r(x) \cdot h(x)$

4. $m(x) \cdot r(x)$

5. $a(x) \cdot h(x)$

6. $m(x) \div r(x)$

7. $a(x) \div m(x)$

8. $r(x) - m(x)$

9. $h(x) + a(x)$

10. $m(x) + h(x)$

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Simplify.

1) $9^{\frac{1}{2}}$

2) $(x^6)^{\frac{1}{2}}$

3) $(81m^6)^{\frac{1}{2}}$

4) $36^{\frac{3}{2}}$

Simplify. Your answer should contain only positive exponents.

5) $2m^2 \cdot 2m^3$

6) $2k^4 \cdot 4k$

7) $(x^2)^0$

8) $(4a^3)^2$

9) $\frac{r^2}{2r^3}$

10) $\frac{3n^4}{3n^3}$

Simplify each expression.

$$11) \frac{6(r+2)}{20} \cdot \frac{4r}{6(r+2)}$$

$$12) \frac{2(p+6)}{4} \cdot \frac{p-3}{2(p-3)}$$

$$13) \frac{(p+6)(p-4)}{p-4} \cdot \frac{1}{(p-4)(p-2)}$$

$$14) \frac{u+5v}{8v^2u^2} - \frac{u-6v}{8v^2u^2}$$

$$15) \frac{5n}{30m} + \frac{2m+4n}{30m}$$

$$16) \frac{8}{7v-6} + \frac{4}{3v^2}$$

$$17) \frac{4}{n+7} - \frac{7}{n-2}$$

$$18) \frac{7v}{8} - \frac{8v-4}{5v-2}$$