

9.2 Exponent Rules

NOTES:

PRODUCT RULE!

$$8^5 \cdot 8^3 =$$

$$y^9(y) =$$

$$a^4 a^3 a^{10} =$$

$$2x^4(3x^5) =$$

POWER RULE!

$$(7^4)^3 =$$

$$(x^5)^2 =$$

$$(-10x^6)^2 =$$

$$\left(\frac{1}{3}xy^3\right)^2 =$$

QUOTIENT RULE!

$$\frac{2^5}{2^3}$$

$$\frac{2^{11}}{2^6} =$$

base =

$$\frac{(-4)^7}{(-4)^4} =$$

base =

$$\frac{x^5}{x^3} =$$

base =

$$\frac{3y^{11}}{12y^5} =$$

$$\frac{6x^9y^4z^5}{2xy^2z^4} =$$

$$\left(\frac{2}{3}\right)^3 =$$

$$\left(\frac{x}{y}\right)^3 =$$

$$\left(\frac{2x}{y^2}\right)^3 =$$

G
E
MD
AS

G
E
MD
AS

G
E
MD
AS

$$5y^3 \cdot 6y^7 =$$

$$(4x^5y^3)^4 =$$

$$\frac{5a^8b^5}{7a^5b^3} =$$

BRING THE PAIN!

$$\frac{(2a^3b^4)^3(4ab^5)}{64a^5b^3}$$

G
E
MD
AS

Summarize your notes!

9.2 PRACTICE

Simplify. PRODUCT RULE!

1) $10^5 \cdot 10^{10}$

2) $5^5 \cdot 5^9$

3) $10^4 \cdot 10^8$

4) $6^4 \cdot 6^5$

5) $10v^{10} \cdot v^6$

6) $4n^5 \cdot 5n^6 \cdot 7n^4$

7) $3b^7 \cdot 5b^9$

8) $10x^3 \cdot 4x^4$

9) $4x^8y^3 \cdot 5x^3y^2$

10) $9x^8y^3 \cdot x^5y^7$

Simplify. POWER RULE!

11) $(-3)^3$

12) $(4^2)^2$

13) 2^2

14) $(3^4)^3$

15) $(v^9)^7$

16) $(x^7)^9$

17) $(2b^2)^5$

18) $(2n^5)^3$

19) $(2m^7n^6)^{10}$

20) $(x^3y^{10})^2$

Simplify. QUOTIENT RULE!

21) $\frac{9^7}{9^3}$

22) $\frac{9^{10}}{9^4}$

23) $\frac{8^6}{8^4}$

24) $\frac{5^8}{5^6}$

25) $\frac{2x^{10}}{8x^5}$

26) $\frac{2v^{10}}{2v^5}$

27) $\frac{8a^4}{10a^3}$

28) $\frac{9m^6}{5m^5}$

29) $\frac{10a^5}{8a^4}$

30) $\frac{7x^7y^5}{9y^4}$

Simplify. BRING THE PAIN!

31) $\frac{2^3 \cdot 2^4}{(2^3)^2}$

32) $\frac{(2^2)^3 \cdot 2^3}{2}$

33) $\frac{(a^3)^7}{a^8 a^7}$

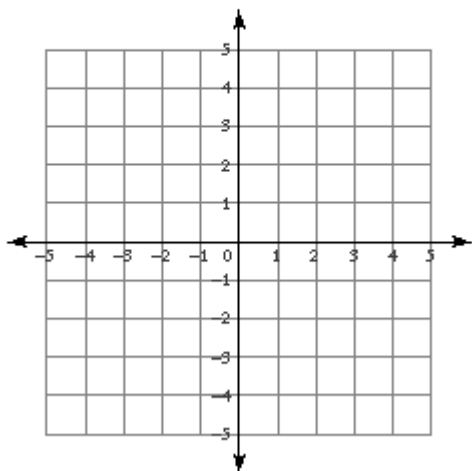
34) $\frac{(r^9)^9}{2r^7 \cdot 2r^2}$

35) $\frac{(2x^6y^7)^8}{x^2 \cdot xy^2}$

36) $\frac{(2a^9b^5)^8}{a^5b^5 \cdot ab^{10}}$

QUICK REVIEW! Solve each system of equations.

1) $x = -3$
 $y = -\frac{1}{3}x - 2$



2) $y = 2x + 4$
 $-4x + 5y = 8$

9.2 APPLICATION

Simplify the following expression.

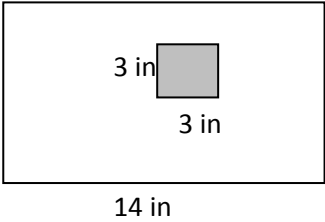
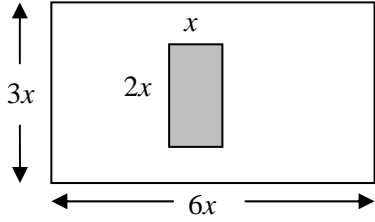
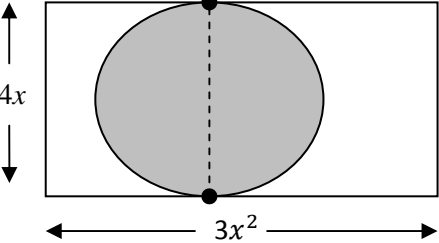
1. $\frac{12d^4}{3d^2} =$

2. $\frac{(3x^3)^9}{3^5x^{15}} =$

3. **GEOMETRIC PROBABILITY** A point is randomly selected on an object, to find the probability that the

point lies in the shaded region use the formula $p(\text{shaded region}) = \frac{\text{area of shaded region}}{\text{area of the outside object}}$.

Find the probability that a randomly selected point falls in the shaded region.

Numeric Solutions	Variable Solutions	
<p>a.</p>  <p style="margin-top: 20px;">Area of Shaded Region =</p> <p style="margin-top: 20px;">Area of Outside Object =</p> <p style="margin-top: 20px;">$p(\text{shaded region}) =$</p>	<p>b.</p>  <p style="margin-top: 20px;">Area of Shaded Region =</p> <p style="margin-top: 20px;">Area of Outside Object =</p> <p style="margin-top: 20px;">$p(\text{shaded region}) =$</p>	<p>c.</p>  <p style="margin-top: 10px; text-align: center;">Area of circle = πr^2</p> <p style="margin-top: 20px;">Area of Shaded Region =</p> <p style="margin-top: 20px;">Area of Outside Object =</p> <p style="margin-top: 20px;">$p(\text{shaded region}) =$</p>

Coming Up... What multiplies to give you the bottom number and adds to give you the top number?

16.	17.	18.	19.	20.
-6 -40	15 36	-14 48	0 -64	13 12