

Math 1 Test REVIEW
Laws of Exponents and Exponential Functions

Name: Dautsch

Simplify

1) $(6x^3)(-4y^2)$

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

3) $(11x^2y)(2xy^4)$

4) $(-4x^2y^3)^3$

$-24y^5$

x^9

$22x^3y^5$

$-64x^{16}y^9$

5) $(4mn^2)^2(2m^2n^3)^3$

6) $\frac{x^4}{x^6} \cdot x^5$

7) $\frac{12m^2}{-2m^{-5}}$

8) $\frac{-14m^2n^4}{7m^0n^5} = -\frac{2m^2}{n}$

$128m^8n^{13}$

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

$-10m^7$

9) $\left(\frac{3xy^3}{z^2}\right)^3 \frac{27x^3y^9}{z^6}$

10) $x^{-4} \cdot \frac{1}{x^4}$

11) $\frac{x^{-5}y^{-3}}{x^{-3}y^{-6}} \cdot \frac{y^3}{x^2}$

12) $\left(\frac{2x^4y^6}{4xy}\right)^0 = 1$

13) $3x(4x + 7)$

14) $(2x - 2)^2$

15) $(5x + 2)(3x + 2)$

16) $3x(2x^2 + 5x - 4)$

$12x^2 + 21x$

$4x^2 - 8x + 4$

$6x^3 + 15x^2 - 12x$

17) $4x^2y^3(x^2y + 7xy - 3)$

18) $(x+2)(x-2)x^2 - 4$

19) $(x+5)(2x^2 + x - 9)$

20) $(x + 5)^2$

$4x^4y^4 + 28x^3y^4 - 12x^2y^3$

$2x^3 + 11x^2 - 4x - 45$

$x^2 + 10x + 25$

21) Find the area of a rectangle with a length of $2x$ and a width of $3x + 1$.

$2x(3x+1) = 6x^2 + 2x$

22) Find the area of a square with side $(4x - 5)^2 = 16x^2 - 40x + 25$

23) $\frac{2x^4 + 3x^3 + x^2}{x^2}$

24) $\frac{10x^3 + 10x^2 - 5x^3}{-5x^3}$

25) $\frac{2x^2 + 2x}{2x}$

$2x^2 + 3x + 1$

$-2x^2 - 2x + 1$

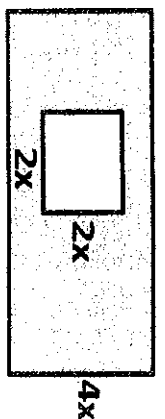
$x + 1$

26) Find the area of the shaded region.

Large area = $12x^2 + 8x$

Small area = $4x^2$

Shaded area = $8x^2 + 8x$



Use the following exponential rule to answer the following questions 27-31.

$y = 35(1.35)^x$

27) Does the rule show growth or decay? growth

28) What is the starting value? 35

29) What is the constant rate (rate of change)? 1.35

30) By what percentage does the y values increase or decrease after each stage? 35%

31) Find x when $y = 211.87$. 10

32) A valuable piece of artwork had a value of \$12,000 in 2005. Its value has been increasing at a rate of 3% per year. Write an equation to find the value after x years.

$y = 12,000(1.03)^x$

33) A lab technician notes that a certain type of bacteria will triple every hour. If he begins with 250 bacteria, how much bacteria will be present in 3 hours.

$250(3)^3 = 6750$

34) A guest on a talk show tends to receive many phone calls right after she is on the show. Then calls become less frequent. If the guest starts with 30 calls per day decreasing at a rate of 8% each day. How many calls can she expect after 7 days?

$30(1 - .08)^7 = 16.7$

35) A school opens in 2000 with 800 students. The student population increases by 2% each year. Use the exponential growth formula to estimate the population of the school in 2014.

$800(1 + .02)^{14} = 1055.58$

36) Jill invested \$1000 in an account at 8% interest compounded quarterly. Using the compounding interest formula, find out how much he will have saved after 7 years.

$A = P(1 + \frac{r}{n})^{nt}$
 $1000(1 + \frac{.08}{4})^{28} = 31741.02$

Name: Deutsch

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 $6x^3+15x^2-12x$

16) $3x(2x^2+5x-4)$

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$4x^4y^4+28x^3y^4-12x^2y^3$

18) $(x+2)(x-2)$

x^2-4

19) $(x+5)(2x^2+x-9)$

$2x^3+11x^2-4x-45$

20) $(x+5)^2$

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$2x(3x+1) = 6x^2+2x$

22) Find the area of a square with side $(4x-5)$

$(4x-5)^2 = 16x^2-40x+25$

23) $\frac{2x^4+3x^3+x^2}{x^2}$

$2x^2+3x+1$

24) $\frac{10x^5+10x^4-5x^3}{-5x^3}$

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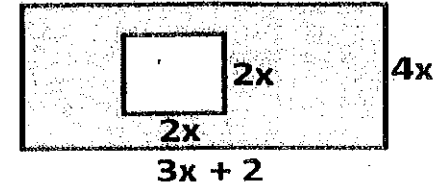
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 $1000\left(1 + \frac{0.08}{4}\right)^{28} = 1741.02$