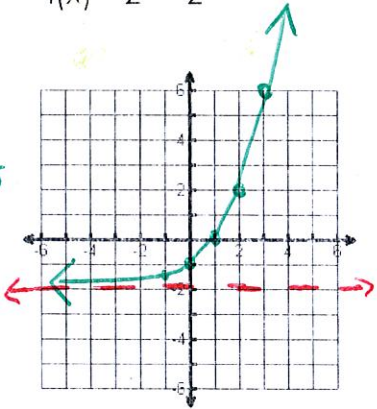


Name: _____

Date: _____

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

What you need to know & be able to do	Things to remember	Problem	Problem
Simplify Exponential Expressions	<ul style="list-style-type: none"> • Multiplying – Multiply #s, add exp. • Dividing – Divide #s, subtract exp. • Exp with () – Distribute to #, multiply exp. • Anything raised to 0 is 1 • Always move negative exponents 	1. $(-5x^{-2}y) \cdot (-2x^{-3}y^2)$ $10x^{-5}y^3$ $\frac{10y^3}{x^5}$	2. $\frac{15x^5y^2z^4}{25x^3y^3z^4}$ $\frac{3x^2}{5y}$
		3. $(3x^5y^3)^0 \cdot (-4xy^{-9})$ $= 1$ $\frac{-4x}{y^9}$	4. $\frac{x^2y^3}{x^{-3}y^5}$ $\frac{x^5}{y^2}$
Solving Exponential Equations	<ul style="list-style-type: none"> • Must have SAME base • Set exponents = (don't forget to distribute) • Solve for x 	5. $5^{3x+1} = 5^{x-9}$ $3x+1 = x-9$ $2x = -10$ $x = -5$	6. $3^{x-8} = 9^x$ $3^{x-8} = (3^2)^x$ $x-8 = 2x$ $x = -8$
		7. $4^{3x} = 8^{x+1}$ $(2^2)^{3x} = (2^3)^{x+1}$ $6x = 3x+3$ $3x = 3$ $x = 1$	8. $4^{4x+8} = \left(\frac{1}{4}\right)^{x-18}$ $4^{4x+8} = (4^{-1})^{x-18}$ $4x+8 = -x+18$ $6x = 10$ $x = 2$
Characteristics of Functions	<ul style="list-style-type: none"> • Domain • Range • Y-int • X-int • Inc/Dec • Asymptote • Rate of Change 	9. Graph the function $f(x) = 2^x - 2$ 	Asymptote: $y = -2$ Domain: \mathbb{R} Range: $(-2, \infty)$ X-Int: $(1, 0)$ Y-Int: $(0, -1)$ Inc or Dec: Inc RoC from $x = 0$ to 1 : 1

11. Millgrove has 324 kids that show up to try out for baseball on the first day. If a third get cut each day, write a sequence for the scenario. $a = 324$ $r = \frac{1}{3}$

$$a_n = 324 \left(\frac{1}{3}\right)^{n-1}$$

How many cuts will it take for there to be 12 kids remaining? **4 cuts**

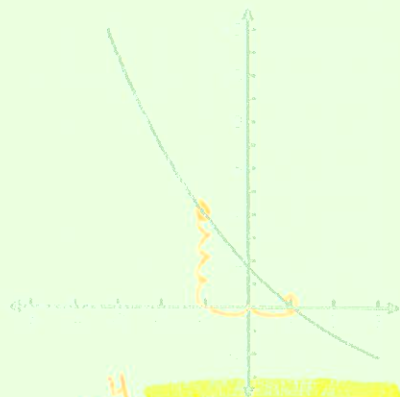
13. The temperature in Georgia has been crazy! Today it was a high of 80 and every hour the temperature was 80% of the previous amount. Write an equation to represent the temperature.

$$y = 80(.80)^x$$

What will the temperature be 5 hours later?

$$26.2^\circ$$

15. When $x_1 = -1$ and $x_2 = 1$



$$m = -\frac{4}{2}$$

$$m = -2$$

are competing to see who can run a mile each day. Jordan starts with 5 times as many miles each day.

each runner.

16. Taylor and Jordan are competing to see who can run a mile each day. Jordan starts with 5 times as many miles each day.

Who will reach 10 miles first? $T: [5, 6]$

Taylor, after 2 days!

Geometric Sequences

- Given first term
- Multiplying or dividing to get to the next term
- $a_n = a_1(r)^{n-1}$

$$a_n = 3(2)^{n-1}$$

Find the 50th term

$$a_{50} = 1.6 \times 10^8$$

Exponential Models

Given Starting value

$$y = a(b)^x$$

12. Write an equation for the chart.

x	0	1	2
y	2	8	32

$$y = 2(4)^x$$

If the table represents tree population and a house only holds 10,000 bees, how many trees do you need before they need another house?

between 1st & 2nd

14. Given the function

$y = 2(2)^x - 5$, find average rate of change from (3, 4)

(2, 13) (4, 37)

$$m = \frac{37-13}{4-2}$$

$$m = 12$$

Average Rate of Change

• slope

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Comparing Functions and Sequences

Given Starting value - Function

$$y = ab^x$$

Given First Term - Sequence

$$a_n = a_1(r)^{n-1}$$

16. Taylor and Jordan are competing to see who can run a mile each day. Jordan starts with 5 times as many miles each day.

Write an equation for Taylor: $a_n = 3(2)^{n-1}$

Jordan: $y = 1/(1.5)^x$

Who will reach 10 miles first? $T: [2, 3]$