





Investigate these equations for exponential growth and decay.

(Use your graphing calculator)

<p>1. Given $y = 3^x$, evaluate y when $x = 3$.</p> <p>f</p> <p>S $y = 3^3$</p> <p>S $y = 27$</p> 	<p>Choose:</p> <p><input type="radio"/> 3</p> <p><input type="radio"/> 9</p> <p><input checked="" type="radio"/> 27</p>
<p>2. Given $y = 3^x$, evaluate y when $x = -2$.</p> <p>$y = 3^{-2}$</p> <p>$y = \frac{1}{9}$</p> 	<p>Choose:</p> <p><input type="radio"/> -9</p> <p><input type="radio"/> -1/9</p> <p><input checked="" type="radio"/> 1/9</p>
<p>3. Would the graph of $y = 0.5^x$ show exponential growth or exponential decay?</p> <p>$y = b^x$</p> <p>$0 < b < 1$</p> <p>$0.05 < 1$</p> <p>so decay</p> 	<p>Choose:</p> <p><input type="radio"/> growth</p> <p><input checked="" type="radio"/> decay</p>
<p>4. Would the graph of $y = 1.5^x$ show exponential growth or exponential decay?</p> <p>b</p> <p>$b > 1$</p> <p>so</p> <p>$1.5 > 1$</p> <p>so growth</p>  <p>★ $b > 1$: growth</p> <p>$0 < b < 1$: decay</p>	<p>Choose:</p> <p><input checked="" type="radio"/> growth</p> <p><input type="radio"/> decay</p>

$y = ab^x$

5. The equation $y = a^x$ will be an exponential function when a equals _____.

→ use calc
b must be
 $0 < b < 1$
or
 $b > 1$
 $b \neq 0$
 $b \neq 1$



Choose:

- 1
- 0
- 1
- 2

6. Which ordered pair represents the y-intercept for the function $y = 2^x$?

$y =$
2nd table



where
 $x = 0$

Choose:

- (0,0)
- (0,1)
- (0,2)

7. The graph of $y = 2^x$ lies in which Quadrants?

In calc
 $y =$
graph



Choose:

- I, II
- I, III
- I, IV

8. The graph of $y = 2^x$ contains which of these points?

$y =$
2nd table



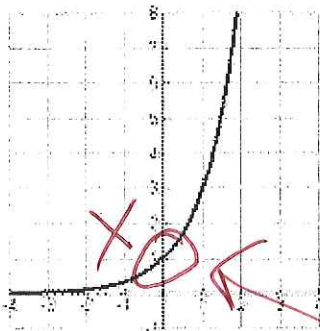
Choose:

- (0,0)
- (0,1)
- (0,2)

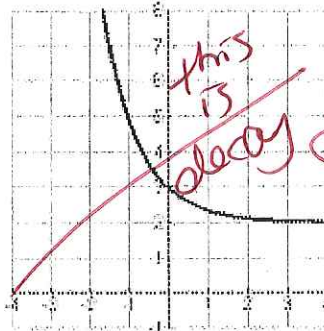
9. Which graph below depicts $y = 3^x + 2$?

Choose:

a



b



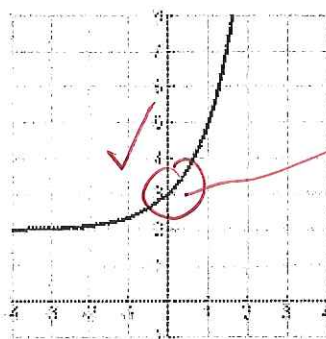
a

b

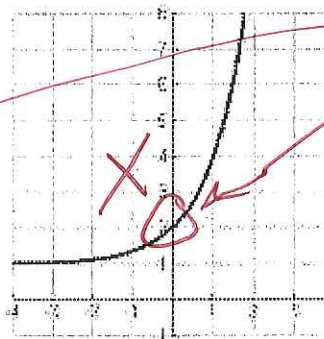
c

d

c



d



y-intercept (0, 3)

10. A piece of paper is folded in half so that there are two thicknesses (or layers) of paper. These new layers are folded in half again to form 4 layers. If this folding continues, which equation will best represent the number of layers of paper (y), in terms of the number of folds (x), where x is a whole number?

Choose:

double

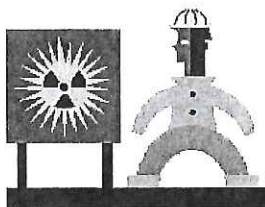
$y = 2^x$

$y = 3^x$

$y = 4^x$

11. An important characteristic of exponential decay is the time required for the decaying quantity to fall to one half of its initial value. This time is called the half-life. A radioactive substance decays exponentially with a half-life of 500 years. After 1,500 years, what percent of the radioactive material remains?

Choose:



$$\frac{1500}{500} = 3$$

$$x = 3$$

$$y = (0.5)^3$$

$$y = .125 \rightarrow 12.5\%$$

30%

15%

12.5%

