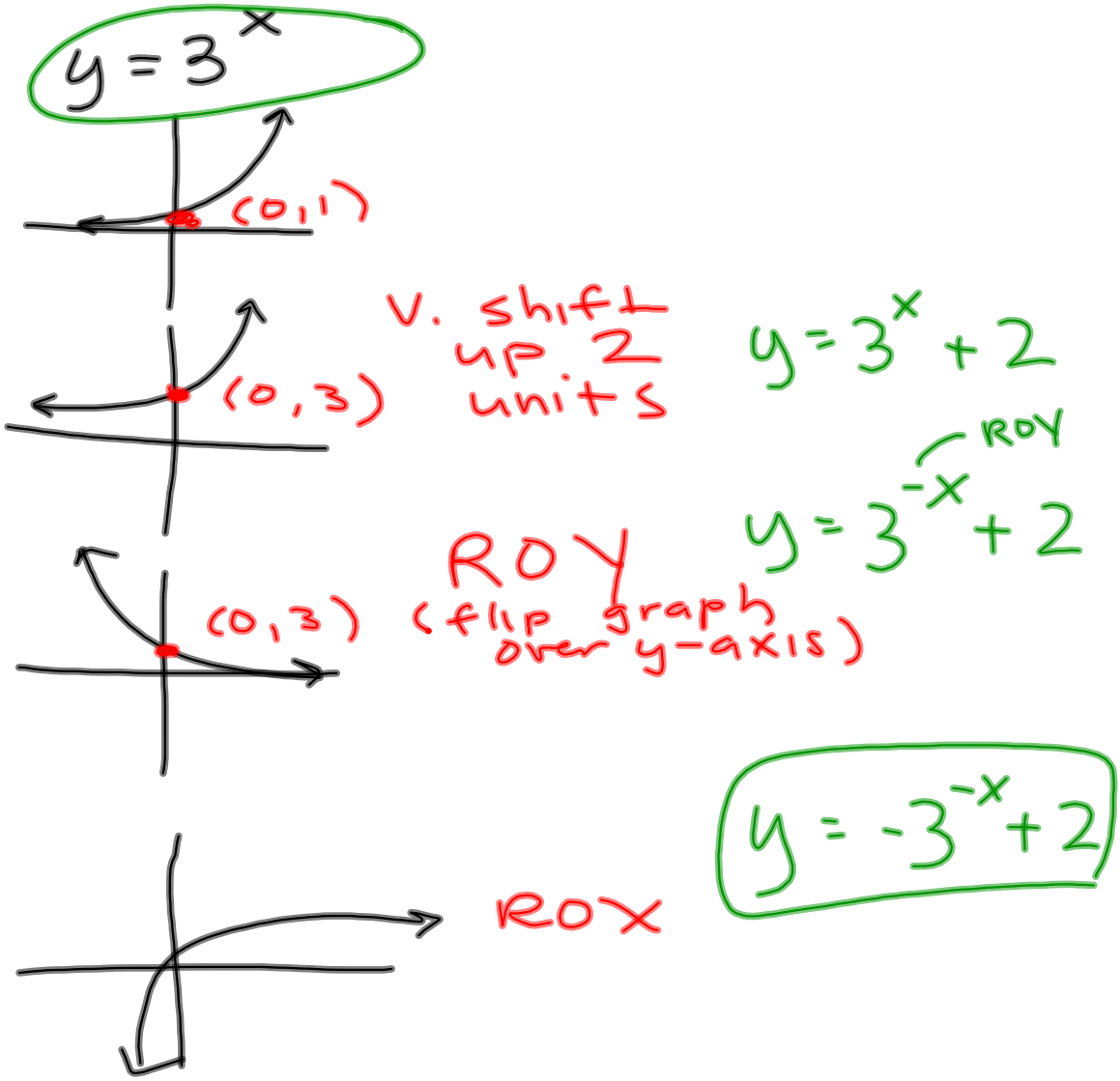

y = 3^x
(0,1)
V. shift up 2 units
y = 3^x + 2
(0,3)
ROY
y = 3^-x + 2
ROY
(0,3)
(flip graph over y-axis)
y = -3^-x + 2
ROX

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

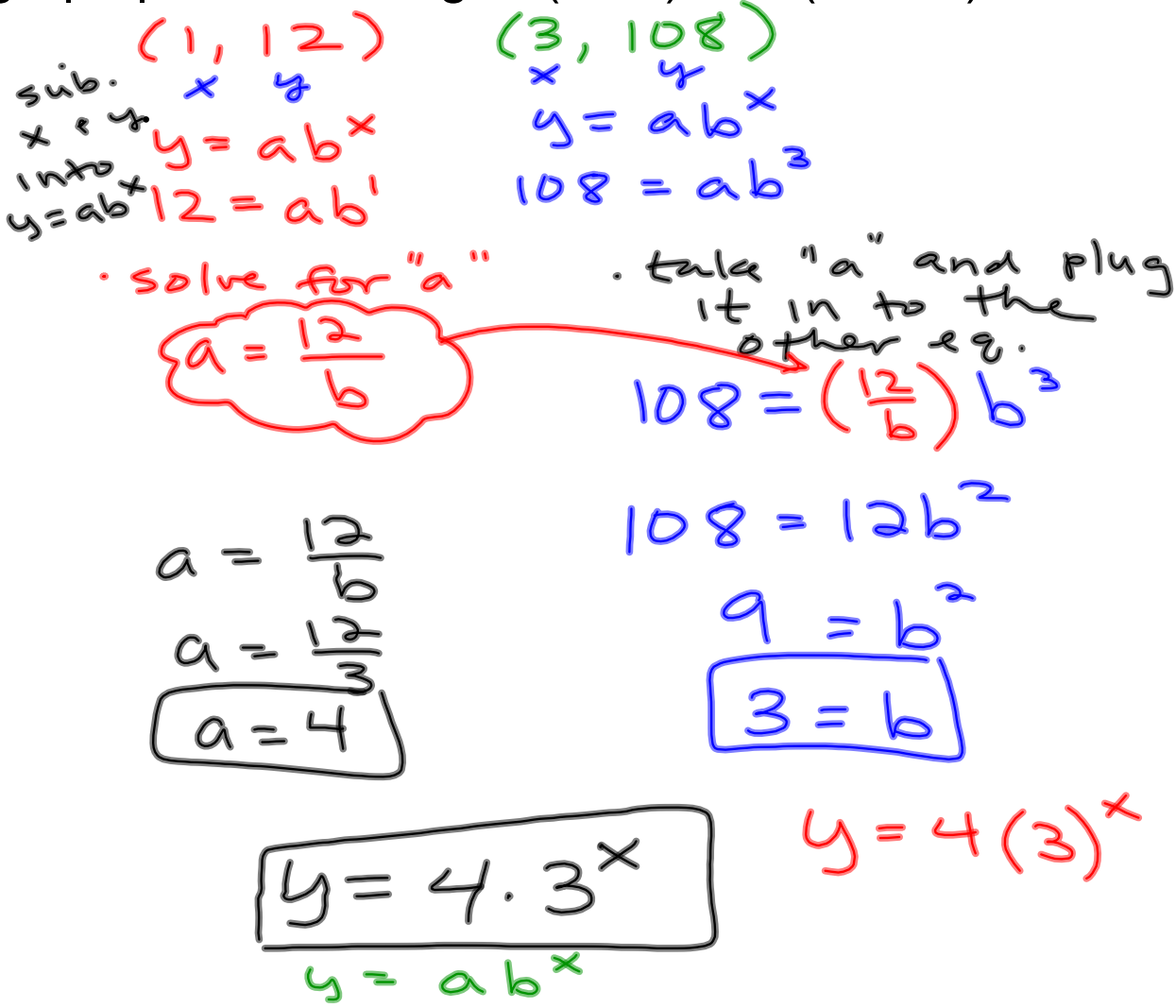
1) ROY $y = \left(\frac{3}{2}\right)^{-x}$

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

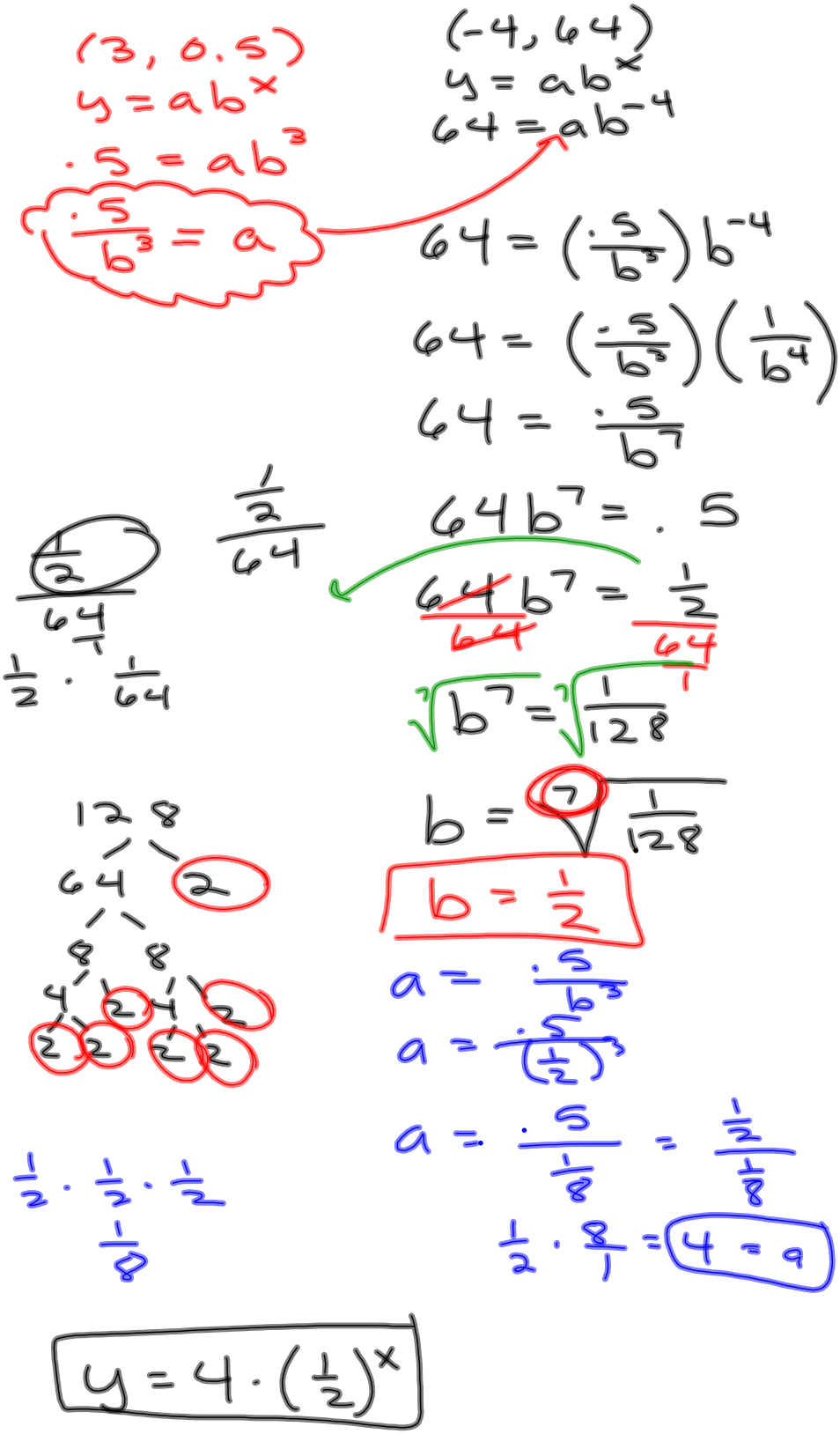
3) v. shift down 4 $y = -\left(\frac{3}{2}\right)^{-x} - 4$

Objectives:
to write and apply exponential functions from two points
to recognize an equation from a set of points
create and solve doubling time and half life equations

1) Write an exponential function $y = ab^x$ whose graph passes through (1,12) and (3, 108).



2) Write an exponential function $y = ab^x$ whose graph passes through(3,0.5) and (-4,64).



3) An online store begins selling a new type of basketball shoe. In week 2, 60 pairs of shoes were sold. In week 4, the store sold 240 pair.

Write an exponential model ($y = ab^x$) that relates the number of shoes (in pairs) sold to the week number.

(week, # pairs)

$y = ab^x$

(2, 60) $60 = ab^2$ → $a = \frac{60}{b^2}$

(4, 240) $240 = ab^4$ → $240 = \left(\frac{60}{b^2}\right)b^4$

$240 = 60b^2$

$4 = b^2$

$2 = b$

$a = \frac{60}{b^2} = \frac{60}{2^2} = \frac{60}{4}$

$a = 15$

$y = 15 \cdot 2^x$

How many did they originally sell?

15 pairs

"a" - initial value

What is the growth factor?

2 = b → growth factor

What is the % increase?

$1 + r = b$ - what is "r"?

$1 + r = 2$ → $r = 1$

$r = 100\%$

How many shoes (if the trend continues) will be sold in week 6?

$y = 15 \cdot 2^x$

$y = 15 \cdot 2^6$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

$2^6 = 64$

$\times 15$

320

640

960

$y = 15 \cdot 64$

$y = 960$ pairs on week 6

Determine which ordered pairs are solutions to the given function.

4) $y = -3\left(\frac{1}{2}\right)^x$ $y = -3\left(\frac{1}{2}\right)^x$

A) (0, -3) $y = -3\left(\frac{1}{2}\right)^x$ $y = -3\left(\frac{1}{2}\right)^0$

B) (2, -0.75) $y = -3\left(\frac{1}{2}\right)^2$ $y = -3\left(\frac{1}{4}\right)$ $y = -\frac{3}{4}$

C) (-1, 6) $y = -3\left(\frac{1}{2}\right)^{-1}$ $y = -3(2)$ $y = -6$

D) (-2, -12) $y = -3\left(\frac{1}{2}\right)^{-2}$ $y = -3(2)^2$ $y = -3 \cdot 4$ $y = -12$

5) For your 16th birthday, you received $250 from your grandparents. (You have very nice grandparents.) You plan to deposit this gift in your savings account that earns 5% interest compounded annually.

Write an equation in standard exponential form for the amount in your account after x years.

$y = a(1+r)^t$

$y = 250(1+.05)^x$

$y = 250(1.05)^x$

y = amt in the acct
x = # of years

How much money will be in your account on your 18th birthday given no deposits or withdrawals are made?

$y = 250(1.05)^2$

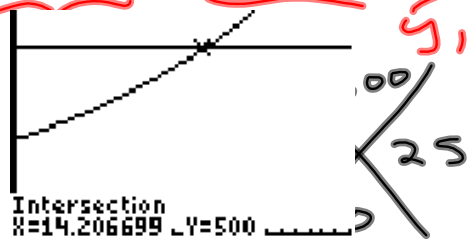
$y = \$275.63$

∴, on my 18th birthday I will have $275.63.

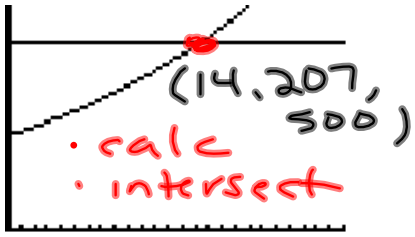
How many years will take to double your money?

$y = 250(1.05)^x$

$500 = 250(1.05)^x$



y1
500
25



∴, in abt 14.207 years, I will have $500

∴ your goal is to save this money to purchase a used car and the car you have in mind costs $5210.99, how long will it take to have enough money to make the purchase?

wksh Day 3
1, 2, 3, 5, 6-8,
11-15