Sec I – Term 3 | Name Key | ID: 1

Self-Check #13 – Linear & Exp Functions | Date________________ Period______

Evaluate each function. $f(x) = 3^x$ $g(x) = 4x$

1. $f(2) = 3^2$

$= 9$

2. $g(-8) = 4(-8)$

$= -32$

3. $g(4) - 3 = 4(4) - 3$

$= 16 - 3$

$= 13$

4. $6[f(-1)]$

$= 6(3^{-1})$

$= 6 \cdot \frac{1}{3} = 2$

5. $\frac{g(3)}{f(1)}$

$= \frac{4(3)}{3^1} = \frac{12}{3}$

$= 4$

6. $f(2) - g(1)$

$3^2 - 4(1)$

$9 - 4$

5

Decide if the situation represents a linear increasing function, a linear decreasing function, an exponential growth function, or an exponential decay function. Then identify the factor/rate of change and the y-intercept.

7) $f(x) = 3 \cdot \left(\frac{1}{2}\right)^x$

$f(x) = a\,b^x$

function type: Exp. Decay

factor/rate of change: $\frac{1}{2}$

y-intercept: 3

8)

x	f(x)
0	10
1	6
2	2
3	-2
4	-6

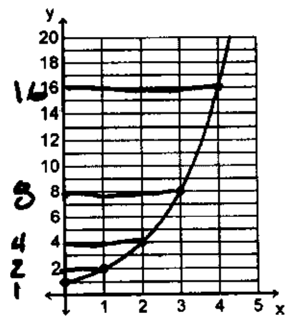
-4, -4, -4, -4

function type: Lin. Dec

factor/rate of change: -4

y-intercept: 10

9)



function type: Exp. Growth

factor/rate of change: 2

y-intercept: 1

10)

x	f(x)
0	2
1	6
2	18
3	54
4	162

$\frac{6}{2} = 3$

$\frac{18}{6} = 3$

$\frac{54}{18} = 3$

function type: Exp Growth

factor/rate of change: 3

y-intercept: 2

11) $f(x) = -5x + 8$

$m = -5$

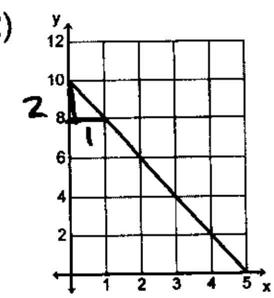
$b = 8$

function type: Lin Dec.

factor/rate of change: -5

y-intercept: 8

12)



function type: Lin. Dec.

factor/rate of change: $-\frac{2}{1}$

y-intercept: 10

Decide if the situation represents a linear increasing function, a linear decreasing function, an exponential growth function, or an exponential decay function. Then write the equation that represents the situation.

$y = mx + b$ or $y = a \cdot b^x$

13) Jaxon has been to 25 Rockies' games and plans on going to 2 more per year.

Function type: Lin. Inc. Equation: $y = 2x + 25$

14) Danielle invested $100 in NBA stock and it has doubled every year.

Function type: Exp. Inc. Equation: $y = 100 \cdot 2^x$

15) Mr. Wallace has 30 gallons of gasoline in his boat and uses 5 gallons of gasoline each time he goes boating.

Function type: Lin Dec. Equation: $y = -5x + 30$

16) Mrs. Sikes has 200 cans of Diet Coke in her monthly supply and drinks 25% of her supply each week.

$1 - .25 = .75$

Function type: Exp. Decay Equation: $y = 200 \cdot (0.75)^x$

17 & 18

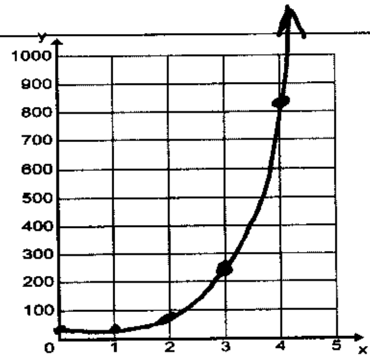
Context

You have $10 in your savings account and plan on tripling the amount of money each month by working hard.

Table

Months	Money	
0	10	$\cdot 3$
1	30	$\cdot 3$
2	90	$\cdot 3$
3	270	$\cdot 3$
4	810	$\cdot 3$
5	2430	

Graph



Factor (b): 3

Start Point (a): 10

Equation: $y = 10 \cdot 3^x$

19). The number of twitter accounts is modeled by the equation $f(x) = 50{,}000(1.75)^x$ per month. Does this represent growth or decay? Find the number of twitter accounts after 6 months.

a b

$1.75 > 1$ so growth

$f(6) = 50000(1.75)^6$

$f(6) = 1{,}436{,}145$

20). The number of regular telephones is modeled by the equation $f(x) = 825{,}000(0.85)^x$ per day. Does this represent growth or decay? Find the number of telephones after 2 weeks.

a b

$0.85 < 1$ so decay

2 week = 14 days

$f(14) = 825000(0.85)^{14}$

$= 84{,}785$