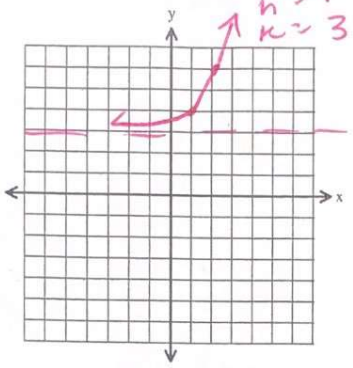
Algebra 2 extra worksheet unit 9

Name Have/

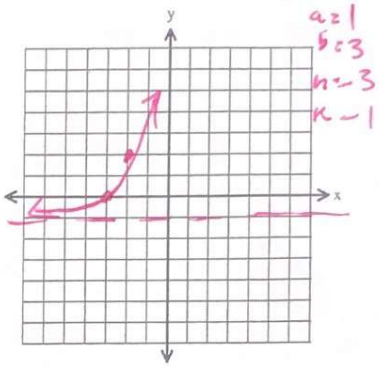
1) $y = 3^{x-1} + 3$

Domain: $\mathbb{R}$
Range: $y > 3$
Transformations: ↑3, →1
Growth/Decay?



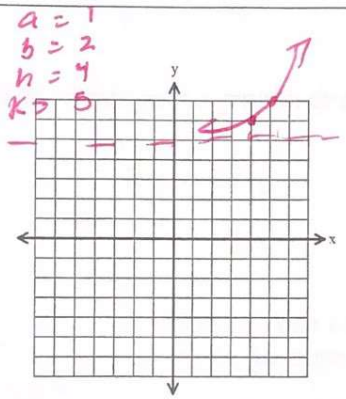
2) $y = 3^{x+3} - 1$

Domain: $\mathbb{R}$
Range: $y > -1$
Transformations: ↓1, ←3
Growth/Decay?



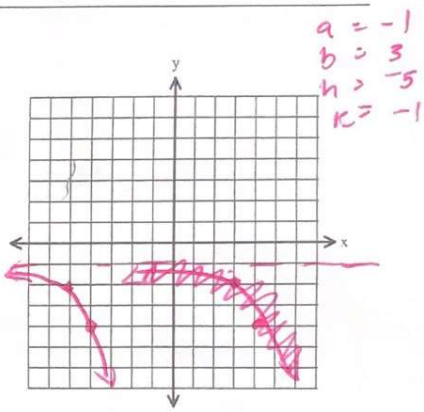
3) $y = 2^{x-4} + 5$

Domain: $\mathbb{R}$
Range: $y > 5$
Transformations: ↑5, →4
Growth/Decay?



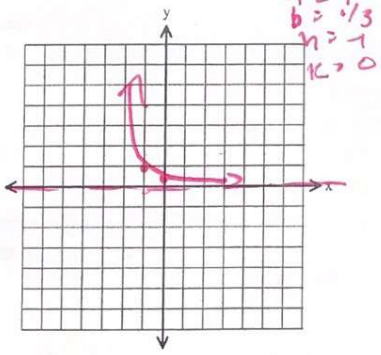
4) $y = -3^{x+5} - 1$

Domain: $\mathbb{R}$
Range: $y < -1$
Transformations: Ref, ↓1, ←5
Growth/Decay?



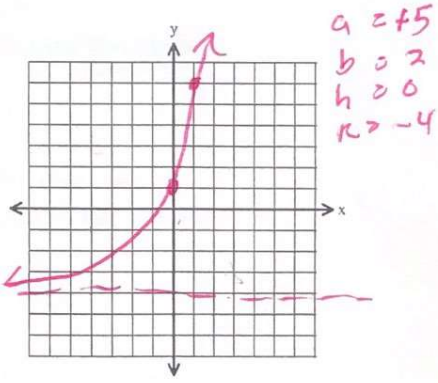
5) $y = \left(\frac{1}{3}\right)^{x+1}$

Domain: $\mathbb{R}$
Range: $y > 0$
Growth/Decay?
Transformations: ←1



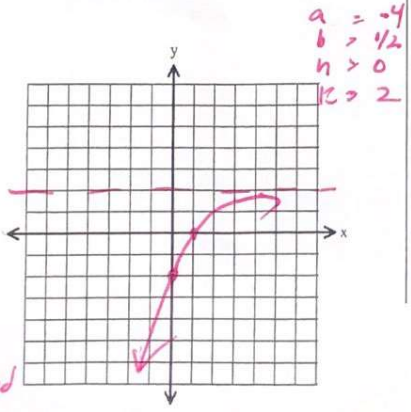
6) $y = +5(2)^x - 4$

Domain: $\mathbb{R}$
Range: $y > -4$
Growth/Decay?
Transformations: ↓4, stretched



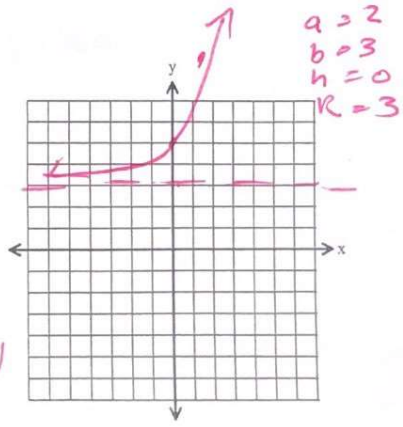
7) $y = -4\left(\frac{1}{2}\right)^x + 2$

Domain: $\mathbb{R}$
Range: $y < 2$
Growth/Decay?
Transformations: ↑2, Ref, stretched



8) $y = 2 \cdot 3^x + 3$

Domain: $\mathbb{R}$
Range: $y > 3$
Growth/Decay?
Transformations: ↑3, stretched



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

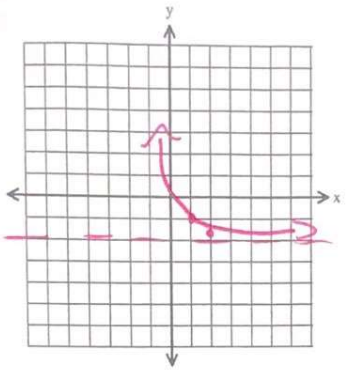
a = 1
b = 1/4
h = 1
k = -2

Domain: ℝ

Range: $y > -2$

Growth/Decay?

Transformations: → 1, ↓ 2



10) $y = 4^{x+3} - 3$

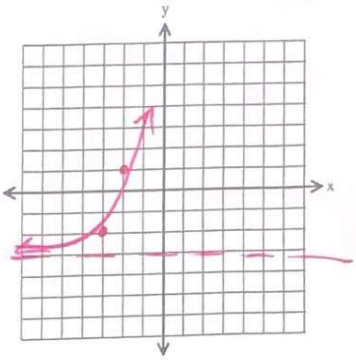
a = 1
b = 4
h = -3
k = -3

Domain: ℝ

Range: $y > -3$

Growth/Decay?

Transformations: ← 3, ↓ 3



For #7-10, identify if the function is a growth or a decay function.

11. $f(t) = -2.3 \cdot 5^t$ G

12. $y = 6\left(\frac{1}{2}\right)^x$ D

13. $f(x) = .15(2)^{-x}$ D

14. $y = -3\left(\frac{1}{6}\right)^{-x}$ G

15. Samantha buys a house for $125,000. The value of the house increases by 3% each year.

a.) Write an exponential growth function to model the value of Samantha's house t-years after she bought it.

$A(t) = 125000(1+0.03)^t$

or

$125000(1.03)^t$

b.) What is the value of Samantha's house 7 years after she purchased the house?

$125000(1.03)^7$

$153734.23

16. Jimmy buys a car for $15,000. The value of the car depreciates by 7% each year.

a.) Write an exponential decay function to model the value of Jimmy's car t-years after he bought it.

$15000(1-0.07)^t$

or

$15000(0.93)^t$

b.) What is the value of Jimmy's car 4 years after he purchased the car?

$15000(0.93)^4$

$11,220.78

grow

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Name_____

17. $\frac{18x^7y^{-2}z}{3x^{-1}yz}$

$\frac{18x^7x^1}{3y^2} = \frac{6x^8}{y^2}$

18. $\frac{\sqrt[4]{a^3}\cdot\sqrt[4]{a^2}}{a^2}$

$\frac{a^{3/4}\cdot a^{2/4}}{a^2} = \frac{a^{5/4}}{a^2} = \frac{a^{5/4}}{a^{8/4}}$

$a^{5/4-8/4} = a^{-3/4} = \frac{1}{a^{3/4}}$ or $\frac{1}{\sqrt[4]{a^3}}$

19. $2^{x+3} = 32$

$2^{x+3} = 2^5$

$x+3 = 5$

$x = 2$

20. $3^{x-2} = 81$

$3^{x-2} = 3^4$

$x-2 = 4$

$x = 6$

21. $4^{3x} = 64^{2x-7}$

$4^{3x} = (4^3)^{2x-7}$

$3x = 6x-21$

$-3x = -21$

$x = 7$

22. $\frac{x^{2/3}y^{4/3}}{x^{5/4}y^{1/2}}$

$x^{2/3-5/4} = x^{-7/12}$

$y^{4/3-1/2} = y^{5/6}$

$\frac{y^{5/6}}{x^{7/12}}$

23. $\frac{\left(-2a^{5/3}b^{1/4}\right)^3}{\left(5a^{1/5}b^{1/2}\right)^2}$

$\frac{-2^3a^5b^{3/4}}{5^2a^{2/5}b^1}$

$a^{5-2/5} = a^{23/5}$

$b^{3/4-1} = b^{-1/4}$

$\frac{-8a^{23/5}}{25b^{1/4}}$