

Name: _____

Advanced Algebra

Date: _____ Period: _____

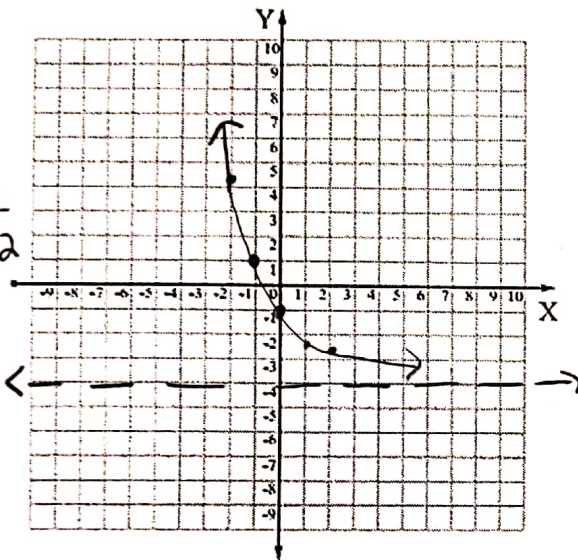
8.1-8.2 Review

Graph the following exponential functions. List the horizontal asymptote, domain, and range of each.

1. $y = 3(6)^x - 4$

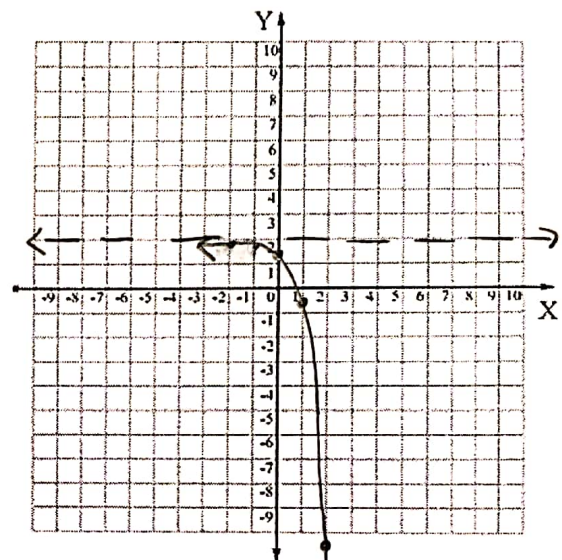
2. $y = -\frac{1}{2}(5)^x + 2$

X	y
-2	4.3
-1	1
0	-1
1	-2.2
2	-2.92



HA: $y = -4$
 D: \mathbb{R}
 R: $y > -4$

X	y
-2	1.98
-1	1.9
0	1.5
1	-.5
2	-10.5



HA: $y = 2$
 D: \mathbb{R}
 R: $y < 2$

Answer the following word problems using an exponential growth or decay model.

3. Write an exponential function to model each situation. Find the value of each function after five years.

a. A \$12,500 car depreciates 9% each year.

$$y = 12,500(1 - .09)^t$$

$$y = 12,500(1 - .09)^5 = \boxed{\$7800.40}$$

b. A baseball card bought for \$50 increases 3% in value each year.

$$y = 50(1 + .03)^t$$

$$y = 50(1.03)^5 = \boxed{\$57.96}$$

4. Richard buys a car for \$26,000 in 2012. The car's value decreases by 13% each year. When will the car be worth less than \$18,500?

$$26000(1-.13)^t = 18500$$

$$\boxed{2-3 \text{ yrs.}}$$

5. The population of Wieuca is 526, and it is growing by 4.5% each year. How many years will it take for the population to reach 1,500 people?

$$526(1+.045)^t = 1500$$

$$\boxed{23-24 \text{ yrs}}$$

6. You drink an energy drink before school that has 128 mg of caffeine. The caffeine leaves your system at a rate of 14.2% per hour. How much caffeine will you have left in your system in 2 hours?

$$128(1-.142)^2 = \boxed{94.23 \text{ mg}}$$

7. A computer valued at \$6500 depreciates at the rate of 14.3% per year. What is the value of the computer after 3 years?

$$6500(1-.143)^3 = \boxed{\$4091.25}$$

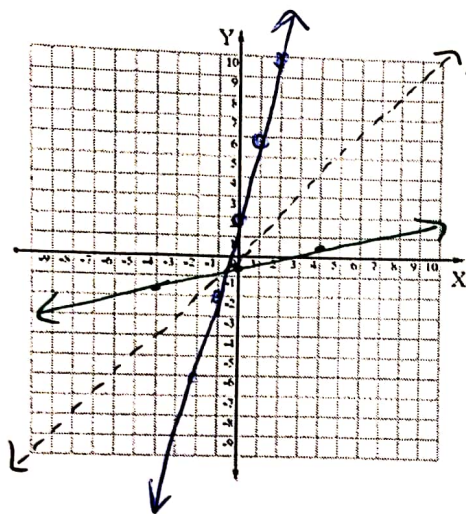
8) You deposit \$713 into your bank account that has an interest rate of 5% per year. How many years will it take to reach \$1300?

$$713(1+.05)^t = 1300$$

$$\boxed{12-13 \text{ yrs}}$$

Find the inverse of the function and graph # 9, 10, and 13.

9. $f(x) = 4x + 2$

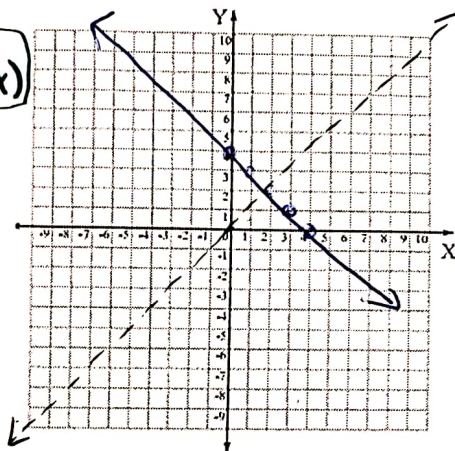


$$x = 4y + 2$$

$$\frac{x-2}{4} = \frac{4y}{4}$$

$$\frac{1}{4}x - \frac{1}{2} = f^{-1}(x)$$

10. $f(x) = -x + 4$



$$x = -y + 4$$

$$x - 4 = -y$$

$$-x + 4 = f^{-1}(x)$$

11. $f(x) = \frac{2}{x+1} - 5$

$$x = \frac{2}{y+1} - 5$$

$$x + 5 = \frac{2}{y+1}$$

$$y + 1 = \frac{2}{x + 5}$$

$$f^{-1}(x) = \frac{2}{x+5} - 1$$

12. $f(x) = (x + 3)^2 - 1$

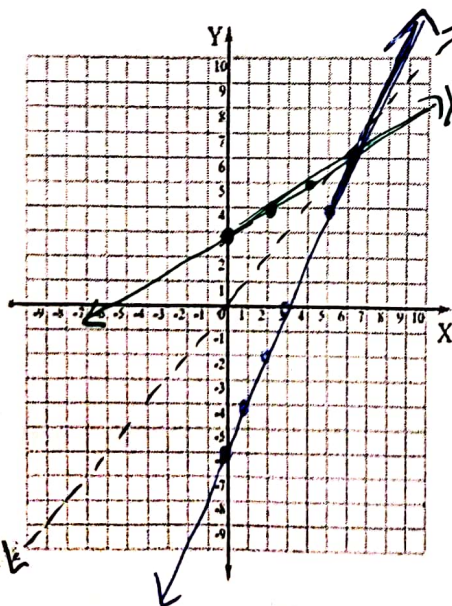
$$x = (y + 3)^2 - 1$$

$$\sqrt{x + 1} = (y + 3)$$

$$\sqrt{x + 1} = y + 3$$

$$\sqrt{x + 1} - 3 = f^{-1}(x)$$

13. $f(x) = 2x - 6$



$$x = 2y - 6$$

$$\frac{x + 6}{2} = \frac{2y}{2}$$

$$\frac{1}{2}x + 3 = f^{-1}(x)$$

14. $f(x) = \sqrt[3]{-(x-1)} - 3$

$$x = \sqrt[3]{-(y-1)} - 3$$

$$(x + 3)^3 = \sqrt[3]{-(y-1)}$$

$$(x + 3)^3 = -(y - 1)$$

$$-(x + 3)^3 = y - 1$$

$$-(x + 3)^3 + 1 = f^{-1}(x)$$