

AK

623 - 1ST - CHAPTERS 1 - 6 FINAL EXAM REVIEW - #2 -

are statistical measures for some set of data. Find the new values when each value in the data is increased by 3.

mean: 86	b., median: 84	c., mode: 91	d., range: 33
	87	94	NO CHANGE
range	f., standard deviation: 5.6	g., variance: 3136	3136 - NO CHANGE
	NO CHANGE		

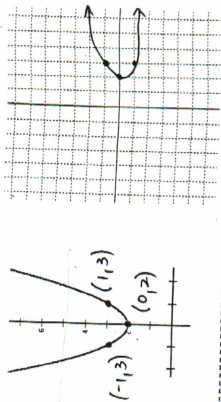
1. Evaluate if... $f(x) = 3x - 8$	b., $g(h(5))$	c., $f(f(x))$	d., $f^4(x)$
$g(x) = 2x^2 - 7$	$h(5) = -2$	$j(3x-8)$	$x = 6y + 2$
$h(x) = -x + 3$	$g(2) = 1$	$6(3x-8) + 2$	$x-2 = y = j^{-1}(x)$
		$= 18x - 46$	

2. In the following graphs, find...	b.,	c.,	d.,
parent function.	parent function.	parent function.	parent function.
i., equation.	i., equation.	i., equation.	i., equation.
$y = kx^3$	$y = k/x$	$y = k/x$	$y = kx$
ii., domain/range.	ii., domain/range.	ii., domain/range.	ii., domain/range.
$y = (x-2)^3 + 2$	$y = x+1 - 4$	$y = x+1 - 4$	$y = x - 3$
iii., domain/range.	iii., domain/range.	iii., domain/range.	iii., domain/range.
$d: x = \mathbb{R}$	$d: x = \mathbb{R}$	$d: x = \mathbb{R}$	$d: \mathbb{R}$
$r: y = \mathbb{R}$	$r: y = \mathbb{R}$	$r: y \geq -4$	$r = \mathbb{R}$

4. Nadav captures and tags 27 goats on his uncle's farm in Moscow. A week later, he captures 21 goats and only 6 were tagged and one only had three legs. About how many goats are there on Nadav's uncle's farm?

$$\frac{27}{x} = \frac{6}{21} \quad 6x = 567 \quad x = 94.5 \approx \frac{95}{100}$$

5. Given the graph below, a., find the graph for the inverse.



- b., Is the original graph odd event? or neither? **EVEN**
- c., Is the inverse graph odd event? or neither? **NEITHER**

6., Odd Event? Or neither?	b., $y = 3x^2 - 2$	c., $y = 2x + 5$	d., $y = x^2 - 1$
a., $y = x$	ODD	EVEN	NEITHER
7. Symmetric? To what?	b., $y = 3x^2 - 2$	c., $y = 2x + 5$	d., $y = x^2 - 1$
a., $y = x$	ORIGIN	Y-axis	Y-axis

8. Given the graph below... a., find the parent function. b., Find the equation.	a., $y = \frac{k}{x^2}$	b., $y = \frac{10}{(x-2)^2} + 1$
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9. The population of Ramsey is growing at a rate of 1.7% each year. If the population is now 17,800... a., what will the population be in 15 years? b., what will the population reach 30,000?

$y = 17,800(1 + 0.017)^{15}$

$30,000 = 17,800(1 + 0.017)^x$

$\frac{30,000}{17,800} = 1.017^x \rightarrow \frac{\log 1.6854}{\log 1.017} = x$

$x = 30.97 \text{ yr}$

19. x = 5

ore

10. Allen's new iBook depreciates at a rate of 48% every 3 years. If it is worth \$1540, how much will it be worth in 5 years?

$$Y = \$1540(1 - .48)^{5/3} = \$517.84$$

11. Rose's truck depreciates at a rate of 37% every 4 years. He wants to sell it when it is worth 25% of its original price. How long should Rose wait from the day he bought the car to sell it?

$$1 = 4(1 - .37)^{x/4}$$

$$.25 = .63^{x/4}$$

$$\frac{\log .25}{\log .63} = \frac{x}{4}$$

$$3.0004 = \frac{x}{4}$$

$$X = 12 \text{ years}$$

12. The half-life of a certain radioactive element is 312 years. If you have a 84 gram sample now, a. how much did you have 1000 years ago?

$$Y = 84(.5)^{-1000/312}$$

$$= 777.67 \text{ grams}$$

13. $10^x = 8567$

$$\log 8567 = x$$

$$x = 3.9328$$

14. $7^x = 5555$

$$\frac{\log 5555}{\log 7} = x$$

$$x = 4.4311$$

15. $4^x = 29$

$$\frac{\log 29}{\log 4} = x$$

$$x = 2.4290$$

16. $3^x = 84$

$$\frac{\log 84}{\log 3} = x$$

$$x = 4.0331$$

17. $\log 1000 = x$

$$x = 3$$

18. $\log x = 5$

$$10^5 = x$$

$$x = 100,000$$

19. $\log_2 64 = x$

$$x^2 = 64$$

$$x = 4$$

20. $\log_8 599 = x$

$$\frac{\log 599}{\log 8} = x$$

$$x = 3.0755$$

21. $e^x = 100,000$

$$\ln 100,000 = x$$

$$x = 11.5129$$

22. $\ln x = 4.2$

$$e^{4.2} = x$$

$$x = 66.6863$$

23. $e^{2x} = 570$

$$\ln 570 = 2x$$

$$x = 31.73$$

24. $e^{31x} = 1.77$

$$\ln 1.77 = .031x$$

$$x = 18.4187$$

5. Convert $\log_b Y = x$ to exponential form.

$$b^x = Y$$

26. Convert $e^x = F$ to log form.

$$\log_e F = x$$

32. The population of Ridgewood, NJ is currently 24,100 and is growing at a continuous rate of 0.9% every year.

- a. What will the population reach in 20 years?

$$Y = 24,100(e)^{(0.009 \times 20)}$$

$$= 28,733 \text{ people}$$

- b. When will the population reach 50,000?

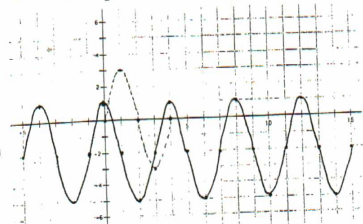
$$\frac{50,000}{24,100} = \frac{24,100 e^{.009x}}{24,100}$$

$$2.0747 = e^{.009x}$$

$$\ln 2.0747 = .009x$$

$$X = 81.09 \text{ years}$$

33. Graph $y = 3\sin\left(\frac{\pi}{2}(x+1)\right) - 2$ over the domain $-5 \leq x \leq 15$.



amp: 3

per: 4

shifts:

L1

D2

NEXT POINT:

P/L: 1

U/D: 3

34. Find the value(s) of θ to satisfy the following equations with the domain $0^\circ \leq x \leq 360^\circ$. For each list the reference angle, quadrant and value(s).

a. $\sin \theta = \frac{1}{2}$

I II

b. $\cos \theta = \frac{1}{2}$

I II

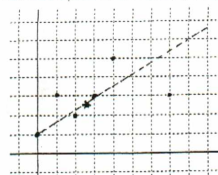
60°

c. $\tan \theta = \sqrt{3}$

I II

60°

27. a. Plot the points (0, 1), (1, 3), (2, 2), (3, 3), (4, 5) and (7, 3) on the graph below.



- b. Find the center of gravity (mark it * on the graph).

$$X = 0+1+2+3+4+7 = 17 \div 6 = 2.83$$

$$Y = 1+3+2+3+5+3 = 17 \div 6 = 2.83$$

- c. Draw the line of best fit through (0, 1), the COG. ✓

- d. Find the average rate of change from $x = 0$ to $x = 4$ for the data above.

$$\text{SLOPE} = \frac{Y-Y}{X-X} = \frac{5-1}{4-0} = \frac{4}{4} = 1$$

28. A sample of bacteria invades Allen's soul. It triples every 20 minutes. If there are 1200 now...

How many will there be in 2 hours?

$$Y = 1200(3)^{(2 \times 3)} = 874,800 \text{ bacteria}$$

- b. When will there be 500,000?

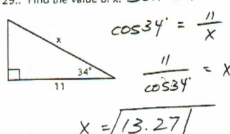
$$\frac{500,000}{1200} = \frac{1200(3)^x}{1200}$$

$$416.6667 = 3^x$$

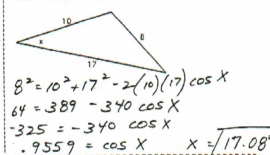
$$\log 416.6667 = \log 3^x$$

$$x = 1.83 \text{ hours}$$

29. Find the value of x . SOH · CAH · TOA



30. Find the value of x . SSS · cosines



31. Dado el ecuación $y = \frac{5}{x+3} - 4$ dónde están los asymptotas?

$$x \neq -3 \quad y \neq -4$$