

# [EXAM 1 REVIEW]

**DISCLAIMER:** THIS IS NOT A COMPREHENSIVE REVIEW! I DON'T WANT YOU TO THINK "IF I STUDY ONLY THIS REVIEW, THEN I'LL KNOW WHAT IS ON THE EXAM," - NO! THIS REVIEW IS DESIGNED TO KICKSTART YOUR PERSONAL REVIEW. FIND OUT WHICH THINGS YOU STRUGGLE W/ AND USE THE ONLINE REVIEW TO PRACTICE THOSE THINGS!

(PART 1: CH. 1-3)

[1] FIND EQUATION OF LINE PASSING THROUGH  $(6, -4)$  &  $(-12, 8)$

[2] LET

$$p(x) = \begin{cases} -2x - 1 & \text{IF } -4 \leq x \leq 0 \\ 3 & \text{IF } 0 < x < 7 \end{cases}$$

- FIND  $\text{dom}(p)$
- FIND  $p(-2)$ ,  $p(0)$ ,  $p(6)$
- GRAPH  $p(x)$
- IS  $p$  CONTINUOUS ON IT'S DOMAIN?

[3] IS THE FUNCTION BELOW LINEAR OR NOT LINEAR?

x	-2	0	2	4
y	50	42	34	26

[4] A SLINGSHOT IS USED TO PROPEL A STONE UPWARD W/ VELOCITY 100 ft/s AT AN INITIAL HEIGHT OF 6 ft. WHAT IS THE MAXIMUM HEIGHT OF THE STONE?

FIVE STAR.  
\* \* \* \* \*

[5] INITIALLY A TANK OF ANTIFREEZE SOLUTION HAS A 56% CONCENTRATION. HOW MUCH WATER SHOULD BE ADDED SO THAT WE ARE LEFT W/ A 45% SOLUTION. ASSUME YOUR STARTING 56% SOLUTION HAS AN INITIAL VOLUME OF 20 GALLONS.

FIVE STAR.  
\* \* \* \* \*

[6] SOLVE THE FOLLOWING

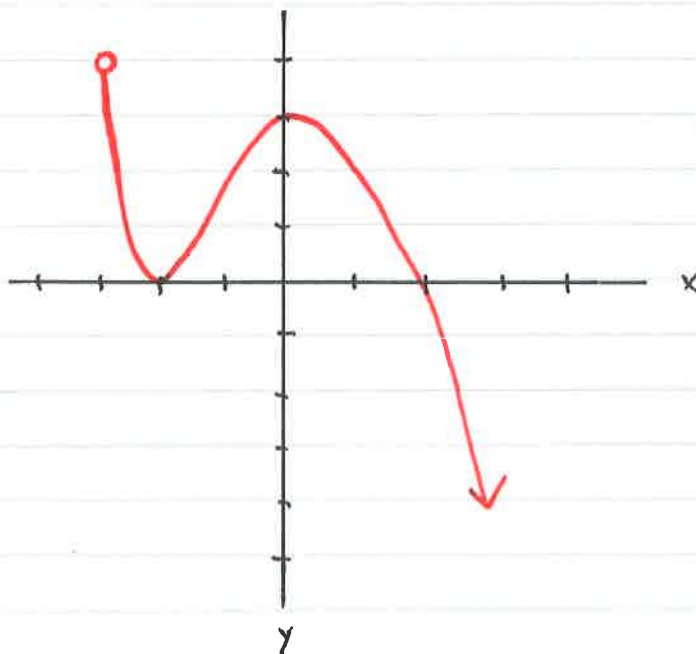
a)  $49k^2 + 4 = -28k$

b)  $x(x-1) = 1$

c)  $x^2 + 11x + 28 = 0$

FIVE STAR.  
\* \* \* \* \*

[7] FIND THE DOMAIN OF THE FOLLOWING + RANGE



FIVE STAR.  
\* \* \* \* \*

[8] FIND THE AVERAGE RATE OF CHANGE FOR

$$h(x) = 0.5x^2 - 5 \text{ on } [-1, 4]$$

FIVE STAR.  
\* \* \* \* \*

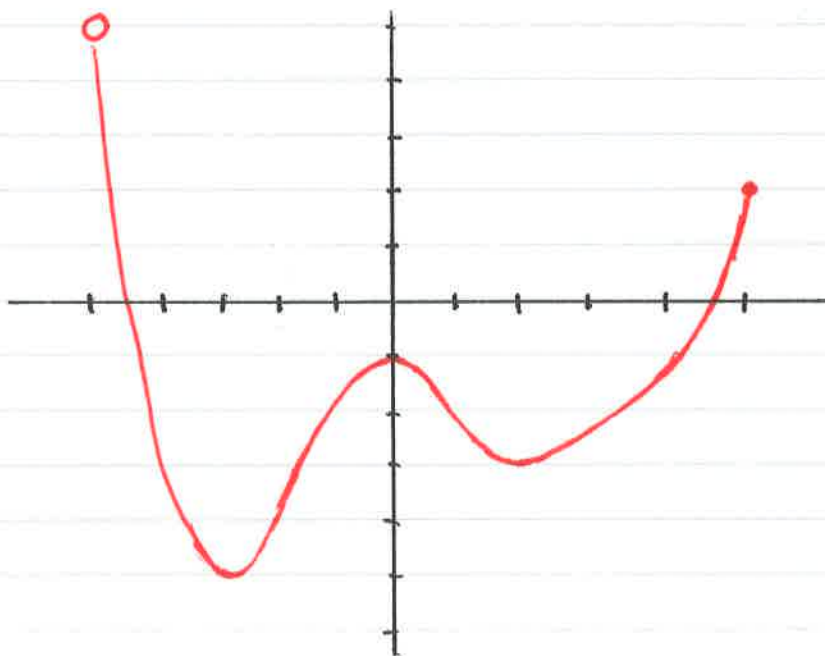
[9] USE THE DIFFERENCE QUOTIENT TO FIND AVERAGE RATE OF CHANGE FOR  $g(x) = -x^2 + 2x$

[10] FIND FORMULA OF DATA BELOW BY CALCULATING  
REGRESSION LINE

x	-1	0	1	2	3
y	-5.7	-2.6	1.1	3.9	7.3

(PART II : CH. 4)

[11.] FIND ALL EXTREMA



[12] DESCRIBE END BEHAVIOR OF

$$f(x) = -2x^3 + x^2 - 25x + 7$$

[13] FIND ALL EXTREMA FOR

$$f(x) = -3x^4 + 8x^3 + 6x^2 - 24x$$

[14] LET

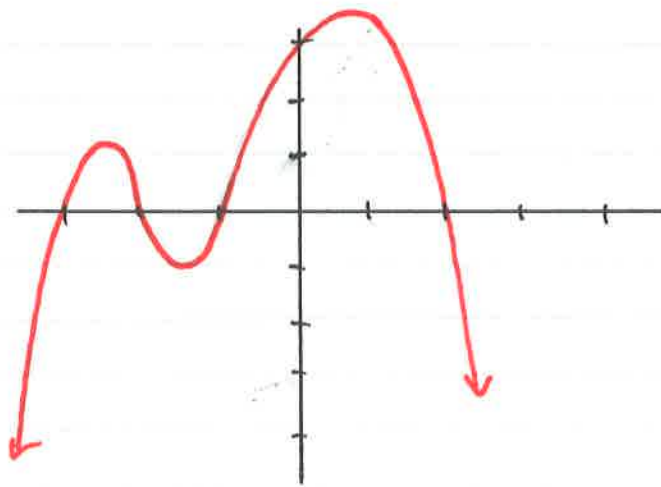
$$l(x) = \frac{2x^2 + x - 15}{3x^2 + 8x - 3}$$

- FIND  $\text{dom}(l)$
- FIND VERTICAL ASYMPTOTES
- FIND HORIZONTAL ASYMPTOTES

[15]

$$\frac{3x^4 + 2x^3 - x^2 + 4x - 3}{x^2 + x - 1}$$

[16] GIVEN THAT  $f$  DOES NOT HAVE LEADING COEFFICIENT  $\pm 1$ , WRITE THE FOLLOWING QUARTIC FUNCTION IN COMPLETE FACTORED FORM.



[17] USE RBT TO FIND RATIONAL ZEROS FOR  
$$f(x) = 2x^4 + x^3 - 10x^2 - 9x + 9$$

[18] WRITE THE FOLLOWING IN COMPLETE FACTORED FORM

$$m(x) = x^3 - 2x^2 + 7x - 14$$

FIVE STAR.  
★★★★★

[19] SOLVE THE FOLLOWING

a)  $x^6 + 9x^3 = x^4 + 9x^2$

b)  $2n^{-2} - 5n^{-1} = 3$

c)  $2x^3 + 5x^2 + x + 12 = 0$

FIVE STAR.  
★★★★★

[20] IF A ZERO OF  $k(x)$  IS  $\frac{2}{7}$ , FIND THE COMPLETE FACTORED FORM OF

$$k(x) = 7x^3 + 5x^2 + 12x - 4$$

[21] IF  $i$  IS A ZERO OF  $l(x)$ , FIND THE COMPLETE FACTORED FORM OF

$$l(x) = x^4 + x^3 + 2x^2 + x + 1$$

FIVE STAR.  
★★★★★

[22] WRITE AN EQUATION OF A RATIONAL FUNCTION WITH HORIZONTAL ASYMPTOTE  $y = -25$  & VERTICAL ASYMPTOTES  $x = \pm\sqrt{2}$

[23] SOLVE THE FOLLOWING

a)  $\sqrt{2x + 1} = 13$

b)  $\sqrt{x + 5} + 1 = x$

FIVE STAR.  
★★★★★