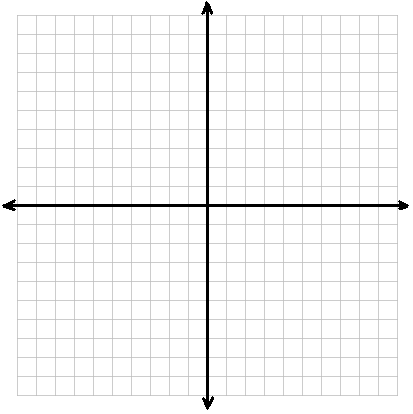
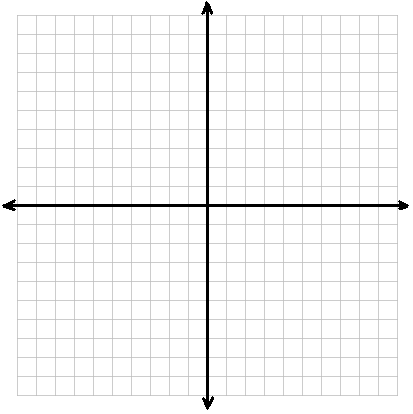
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**Final Exam Study Guide**

**UNIT 1: SYSTEM OF EQUATIONS**



1. **NC** Solve the following system of equations:
2. What method (elimination, substitution, or graphing) would be best to solve this system? Why?
3. Solve the system by graphing.
4. Check your solution.
5. **NC** Solve the following system of equations:
6. Which method would be the best to use for this system? Why?
7. Solve the system by substitution.
8. **NC** Solve the following system of equations:
9. Which method would be the best to use for this system? Why?
10. Solve by **elimination**.

1. **NC** Graph the following system of inequalities. Then, circle the points below that are solutions to the system.

Circle the solutions to the system:

(0, 0) (-4, 3) (-7, 1)

(5, 3) (-2, -3) (-3, -1)

1. **NC** Maria is hosting a party. She places an order at Pizza Hut for 5 pizzas and 4 breadsticks for a total of $51. Halfway through the party, she realizes that she will need one more pizza and 2 more order of breadsticks. This time she was given a total of $15. How much does a pizza cost? How much does a breadstick cost?
2. **NC** Saleh has to buy apples and bananas. A bunch of bananas is $0.30 and an apple is $0.50. He spends a total of $7.00. He bought 3 times as many bananas as he did apples. How many apples did he buy? How many bananas did he buy?
3. Leila has $2 in her purse as coins. She has a total of 16 nickels and quarters. How many coins does she have of each type? Write a system of equations and solve algebraically.
4. For each system below, solve by **two methods**: algebraically and by graphing. Sketch a rough picture of the graph, labeling the solutions clearly.

**UNIT 2: FUNCTION FAMILIES**

|  |  |
| --- | --- |
| Family: Quadratic  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range:  Positive:  Negative:  Increasing:  Decreasing: | Family: Radical  Equation:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_  https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range:  Positive:  Negative:  Increasing:  Decreasing: |
| Family: Absolute Value  Equation:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_  https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range:  Positive:  Negative:  Increasing:  Decreasing: | Family: Exponential Growth  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range:  Positive:  Negative:  Increasing:  Decreasing: |

1. Given the family name, find the parent equation and graph it. Determine the domain, range, and end behavior.
2. For the function , complete the table for the transformation of each variable and describe them.

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1. Graph the following functions. Find their domain and range.

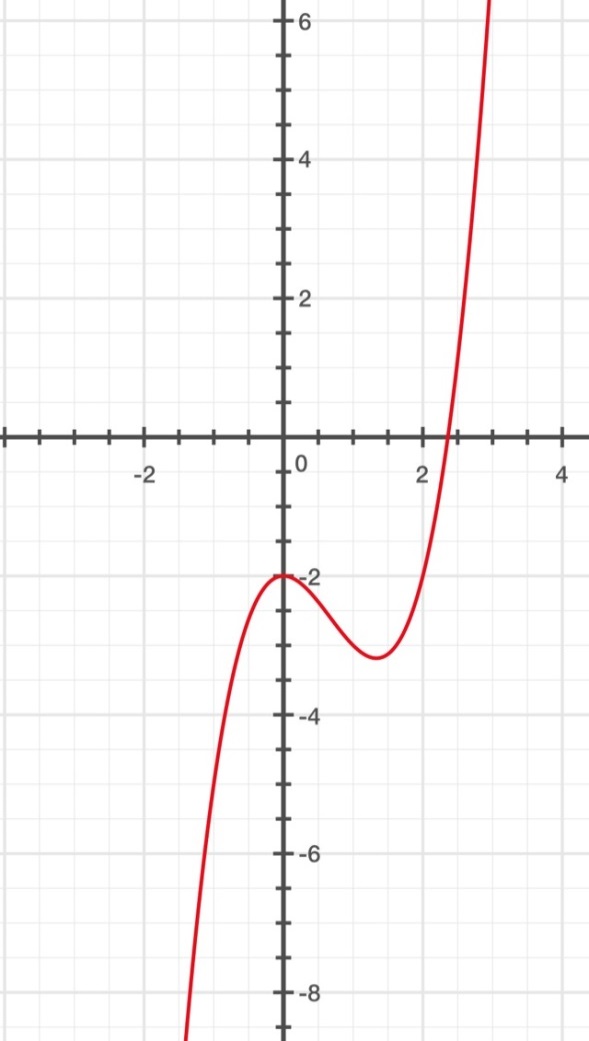
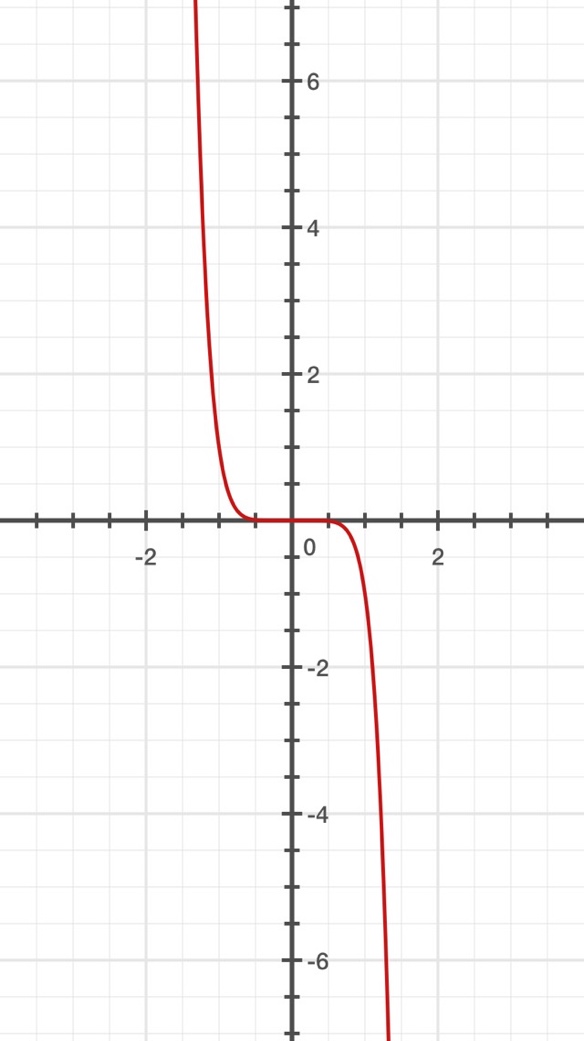
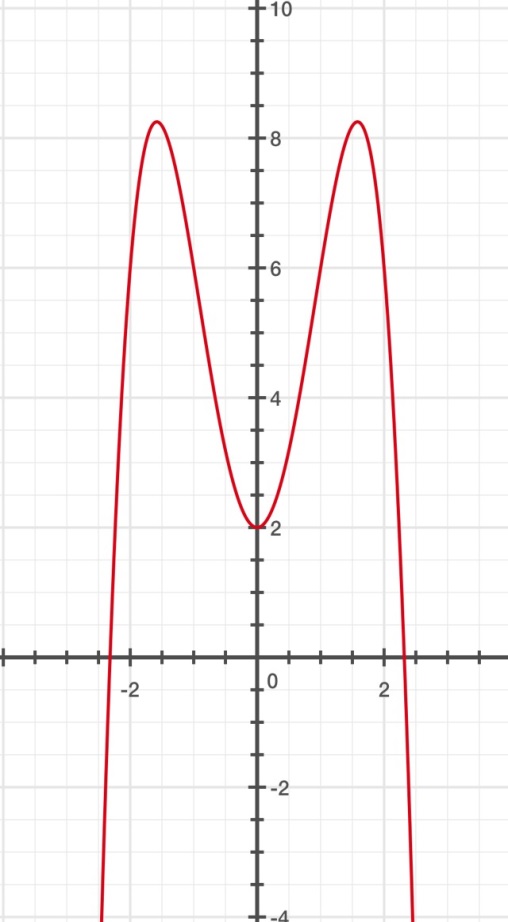
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| https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range: | https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range: |
| https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range: | https://lh6.googleusercontent.com/Rr5UjrH6hMbGS7jE_M8vEu_I_IVk_NMGyl3mmFabVSHuaRIQ9u4-ha6rVqDzMlj_H4iVjkIF405t59NbDx11S28RRZCQ8tUUOPOlfXEOHvZRS008Xq-AOvnQFm6gPgWXR_SREq-DV0RPS6lZcQ  Domain:  Range: |

1. For each graph below, determine whether it is a function. Then determine its domain and range in interval notation. Identify **ONE solution to the function (point on the graph)** and **ONE x-intercept.**

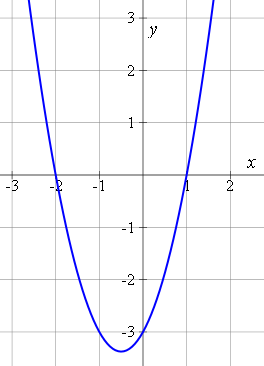
|  |  |
| --- | --- |
| Function? YES/NO  https://lh5.googleusercontent.com/JNM8EHiP_SOk-Nu5QlU79Yb3-5s2afOlVHdFT-PTJR-GY4r_IOJGatcRXgbVcPQA0E0-ea_WvobpyZvVme7eX5-Ha_wM1UqBYIQy9umRvbOjGEwhPoXRLq3zzmzq2PjgTgGTl-1n8GOT2rWPdADomain:  Range:  Solution Pt:  x- intercept:  Parent  Function: | Function? YES/NO  https://lh6.googleusercontent.com/XBE4MT1jzwX7HX02bor0tuTBVQWIPhuELvSDrcIT4ZbeBiBxNc6SHKWhXI6JxlPkaFO95szJUI2gH7X9ifz8Dw6uyYnj0UpKO-OPo-c83ciN3V42XuiRwdcnvciusFqzDXjLzhLesYlOD4vsxgDomain:  Range:  Solution Pt:  x- intercept:  Parent  Function: |
| Function? YES/NO  Domain:  https://lh3.googleusercontent.com/ouEnowwzHzfSttK83xc83TBvXbWM_EOu_ZPc1VKLwAZxUefw-V0QwAX60Joo95Ox2EkOP_x4_OUqN29gUrg3EM2ZwaFi_T-F96sQJQi_saWvA4fgwYXfWATzX79lUY5m9vQrCmnDeEifgSpLAwRange:  Solution Pt:  x- intercept:  Parent  Function: | Function? YES/NO  Domain:  https://lh5.googleusercontent.com/YC9bB_soJ0PXtVc6J1Pu9t8stFUJMS_INseN309_qf4AKnbdzUGpn_DHV55fX9_mXAhkakbv2LR_7qpWdYhF-0kwD_8qIa0ag9fjcsF4kH2vQbVGIwjRUz-1Zrplj5Zd9rsfU-KoSNq_MltJiARange:  Solution Pt:  x- intercept:  Parent  Function: |
| Function? YES/NO  Domain:  Range:  https://lh6.googleusercontent.com/M78fzSM05b0h55ElCetfE2fH1UZ_6t8qqF0Cao64HZipD5n2EtNb2pSvpDegZd6Nt1xZ_EH6_ymmqEBCcBF00TeEpc6Bqn3JQ-xu0IXxa3LhBerG2aZy5_-MXKdDmoQFAKQ4fF6VjfUcNvDEUgSolution Pt:  x- intercept:  Parent  Function: | Function? YES/NO  Domain:  https://lh6.googleusercontent.com/bYzw5AI5buwFGegZRhILd8Nvltf-EOkCRvdPOkN6lI6PVE7qsdQ7hduhc-yS-iLKvWbEMbmHsYn87tL3Sp7GlDIBDV-Pq7pdSEUR5rwzDkyJFPkpJd9m82DS0vSF6qs4hE_0nIv1pTE1d4dbWARange:  Solution Pt:  x- intercept:  Parent  Function: |

1. For each graph, draw one line connecting it to its matching **domain** and then fill in the blanks for the **end behavior** to the right of the graph**.**

|  |  |  |
| --- | --- | --- |
| **DOMAIN** |  | **INTERVALS** |
|  | https://lh6.googleusercontent.com/5EzYdQd1uEOj-x31dPUN-jZnwPTaTEEOzyS2Pry0tCAaULANQ0foQxdyoukk4zDxElabeE811bPYZFjk3XcLoG87CNGLwMFy6RsroQev5yE-irLTIWwykyuh8i_tWNqdhN0iO565_B_ib3rtHQ | End Behavior: |
|  | https://lh3.googleusercontent.com/-HtalEsN1dl9kdt2kjuNcjovazPfNKP_VUfrV42fDfUsZ8Xh-HtPhl1fF7c8eaxVoPx2iKAfJT_PgANrA-M7FRN8w2F7VxJp69SAc06DkGQOqespcbJhpTktrCqJ1U6BilmH84jONFtf_tTLmg | End Behavior: |
|  | https://lh3.googleusercontent.com/lfSUMWfOD6FfAj79zlanDGupQGS4CK9ovNlTGfuBnFtoHZFoZHRgm_lRdMdXnNQu_K-wuhp16kgIMJmxlyWZVpVxUr-cji7vQSX1TKdTNLOVM2pN2JASMFhlxW4SHrr88TwtZ_hPN28Ggkviaw | End Behavior: |

1. Identify the intervals of which the function is **increasing, decreasing or co**

**UNIT 3: QUADRATICS**

1. Simplify the following radicals.
2. Find the **y-intercepts** of the following quadratic functions.
3. **NC** The graph to the right can be represented by which of the following equations:
4. Factor the following functions:
5. Don’t forget that you will have to use the quadratic formula on the final. Please state the quadratic formula and use it to solve for x in the following equations.

1. How many times does each of the following functions intersect the x-axis?
2. Simplify each expression. Write your answer in format.
   1. 
3. Using the graph at the right, It shows the **height *h*** in feet of a small rocket ***t* seconds** after it is launched. The path of the rocket is given by the equation:
4. How long is the rocket in the air? \_\_\_\_\_\_\_\_\_
5. What is the greatest height the rocket reaches? \_\_\_\_
6. About how high is the rocket after 1 second? \_\_\_\_\_\_\_
7. After 2 seconds, about how high is the rocket?\_\_\_\_\_\_\_\_\_
8. After 6 seconds, about how high is the rocket? \_\_\_\_\_
9. A quarterback throws a football up into the air with an initial height of 6 feet. The height, *h*, of the ball at *t* seconds can be represented by the equation
   1. How many seconds will it take to reach the maximum height of the football?
   2. What is the maximum height of the football?
10. A squirrel is 24 feet up in a tree and tosses a nut out of the tree. The nuts height, *h,* at time *t* seconds can be represented by the equation .
    1. How many seconds will it take for the nut to reach maximum height?
    2. What is the maximum height of the nut?
11. Solve the following for x.

**UNIT 4: RATIONALS**

* 1. Simplify the following rational expressions and state the excluded value.
  2. Solve the following rational expressions (find x).