**Algebra 2: Topic 5 Midterm Review**

**1.** Simplify each radical expression, using absolute value bars when necessary. Write your answer in reduced radical form.

**a.**  **b.**  **c. **

**d.**  **e.**  **f.** 

**g. **

**2.** Rewrite each expression using the properties of exponents. Simplify as much as possible and write your final answer with rational exponents with no negative exponents.

**a.**  **b.**  **c.** 

**3.** Solve each equation.

**a.  b.**  **c.** 

**4. Multiple Response**: For the equation, select all the transformations that apply.

[A] Vertical Dilation by a factor of 4 [E] Horizontal Dilation by a factor of 4

[B] Reflection over the x-axis [F] Reflection over the y-axis

[C] Translated to the left 5 [G] Translated to the right 5

[D] Translated up 5 [H] Translated down 5

**5.** For each equation, graph, and fill out the features asked.

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | | **b.** | |
|  | |  | |
| Domain: | Range: | Domain: | Range: |
| Interval where is increasing: | | Point of inflection: | |
| Average rate of change over the interval  : | | Interval where : | |

For Questions 6 & 7:Write the rules for the given functions, simplify as much as possible, and state its domain.

**6. ** and 

**a.  b.  c. **

**7.**  and 

**a.  b.  c. **

**Multiple Choice:** For Questions 8 & 9, identify the inverse of each function.

**8. **

[A]  [C] 

[B]  [D] 

**9. **

[A]  [C] 

[B]  [D] 

**10. Multiple Response**: Which of the following must be true about  and? *Select all that apply.*

[A] If the domain of is all real numbers, then the domain of is all real numbers.

[B] The graphs of  andare reflections over the line.

[C] .

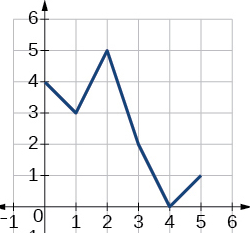
[D]  does not have to pass the vertical line test in order to be a function.

[E]  passes the vertical line test.

**11.** Use the table of , graph of and equation **** to evaluate each of the following.

|  |  |
| --- | --- |
|  |  |
| -1 | -3 |
| 0 | 4 |
| 1 | 11 |
| 2 | 18 |

**a.** 





**b. **

**c. **

**d. **, when 