**You must show work/explain EVERY question, even the multiple choice questions.**

1. Which domain would be the most appropriate set for a function that predicts the average monthly snowfall at Rochester’s Airport?

|  |  |  |  |
| --- | --- | --- | --- |
| 1) | Whole numbers | 3) | All Rational numbers |
| 2) | Integers | 4) | Positive Rational Numbers |

1. \_\_\_\_\_\_\_\_\_

 2.) Which expression is equivalent to $x^{4}-12x^{2}+36?$

|  |  |  |  |
| --- | --- | --- | --- |
| 1) | $$\left(x^{2}-6\right)(x^{2}-6)$$ | 3) | $$\left(6-x^{2}\right)(6+x^{2})$$ |
| 2) | $$\left(x^{2}+6\right)(x^{2}+6)$$ | 4) | $$\left(x^{2}-6\right)(x^{2}+6)$$ |

1. \_\_\_\_\_\_\_\_\_

 3.) If $P\left(x\right)=4x^{2}-17x+36$ and $R\left(x\right)=2x^{2}-5x+25$, what is the value when $P(x)$ is subtracted from $R(x)$?

|  |  |  |  |
| --- | --- | --- | --- |
| 1) |  | 3) |  |
| 2) |  | 4) |  |

1. \_\_\_\_\_\_\_\_\_

4.) Mr. Desmond won the lottery when he was 14 years old and was given $15,000. New York State does not allow anyone to withdraw any of the money until they are 18 years or older. If the winnings earn 2% compounded annually and no deposits or withdrawals are made, how much money will be in the account when he is 18 years old?

|  |  |  |  |
| --- | --- | --- | --- |
| 1) | $16,236.50 | 3) | $21,423.70 |
| 2) | $13,835.50 | 4) | $10,427.00 |

 4.) \_\_\_\_\_\_\_\_\_

 5.) What is the value of *w* in the equation?

|  |  |  |  |
| --- | --- | --- | --- |
| 1) | 2.4 | 3) |  |
| 2) |  | 4) |  |

5.) \_\_\_\_\_\_\_\_

 6.) Consider the system of inequalities shown below.

***y***

***x***

 

 (a) Is the origin, , part of the solution set of the system? Determine without first graphing. [2 points]

 (b) Graph the solution to the system of inequalities. [3 points]

 7.) Biologists are modeling the number of flu cases as it spreads around a particular city. The total number of cases, *y*, was recorded each day, *x*, after the total first reached 16. The data for the first week is shown in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *x*, days | 0 | 1 | 3 | 4 | 6 | 7 |
| *y*, cases | 16 | 18 | 22 | 25 | 33 | 35 |

(b) Based on the regression equation, how many total cases of flu will there be after two weeks? [2 points]

(a) Use your calculator to find the **exponential regression equation** for this data set in the form  Round all parameters to the nearest *hundredth*. [2 points]

(c) According to your model, by what percent are the flu cases increasing on a daily basis? [1 point]