**Directions: Choose the correct answer to each question. No calculators are allowed. In all cases, answer choice E) is NOTA, meaning None Of These Answers. Good luck and have fun!**

1. What is ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) -23** | **B) 13** | **C) 23** | **D) 31** | **E) NOTA** |

1. There is a path leading to the haunted house that is meters long. If and , how long is the path?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 3 m** | **B) 4 m** | **C) 7 m** | **D) 12 m** | **E) NOTA** |

1. What is ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 0** | **B) 1** | **C) 10** | **D) 11.1** | **E) NOTA** |

1. The carnival is a loud place, so the house has extra-thick walls to keep out the noise. The thickness of the wall, in inches, is equal to . How thick is the wall?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 6 in** | **B) 7 in** | **C) 10 in** | **D) 11 in** | **E) NOTA** |

1. Find the degree of the following expression: .

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 4** | **B) 5** | **C) 7** | **D) 8** | **E) NOTA** |

1. When the haunted house was under construction, it had windows. Later, this was increased to windows. If , how many windows were added?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 6** | **B) 19** | **C) 20** | **D) 39** | **E) NOTA** |

1. What is if, , and ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 22** | **B) 25** | **C) 37** | **D) 40** | **E) NOTA** |

1. This haunted house has 5 ghosts in it. They were poorly made, so they are all different heights. They are 1.0, 0.9, 0.9, 1.2, and 1.5 meters tall. Find the sum of the mean, median, and mode ghost heights.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 0.6 m** | **B) 2.9 m** | **C) 3.0 m** | **D) 3.1 m** | **E) NOTA** |

1. Let  and . What is ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) -3** | **B) 5** | **C) 8** | **D) 9** | **E) NOTA** |

1. Every haunted house needs cobwebs. Fake cobwebs sell at $2 for a pack of 5. Each room needs 42 cobwebs. Assuming 5% tax, how much will it cost to decorate 2 rooms? Note: packs must be bought as is and cannot be split. Assume you buy the least number of packs needed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) $18.90** | **B) $34.00** | **C) $36.00** | **D) $37.80** | **E) NOTA** |

1. Let the length of a rectangle be x, and the width be y. If and the area of the rectangle is 56, find the perimeter of the rectangle (ignore units).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 4** | **B) 14** | **C) 18** | **D) 36** | **E) NOTA** |

1. The number of screams per minute in the haunted house is about . What is the closest integer to ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 10** | **B) 11** | **C) 12** | **D) 13** | **E) NOTA** |

1. Which of these numbers is divisible by 9?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 12456** | **B) 13337** | **C) 23456** | **D) 54321** | **E) NOTA** |

1. Wayne is exploring the haunted house. Given the map below, how many ways can he get from room #1 to room #12? Wayne can only move to a room directly horizontally or vertically adjacent to the room he is in. He can also only move to a room with a bigger number.

|  |  |  |  |
| --- | --- | --- | --- |
| Room 9 | Room 10 | Room 11 | Room 12 |
| Room 5 | Room 6 | Room 7 | Room 8 |
| Room 1 | Room 2 | Room 3 | Room 4 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 8** | **B) 9** | **C) 10** | **D) 11** | **E) NOTA** |

1. How can the solution of these two lines be described: and ?

|  |  |  |
| --- | --- | --- |
| **A) Inconsistent only** | **B) Consistent & Dependent** | **C) Consistent & Independent** |
| **D) Can’t be determined** | **E) NOTA** |  |

1. There is some scary music looping in the background of the haunted house (looping means it plays the same thing continuously, without breaks). The number of times you would hear the loop in 1 hour is equal to the greatest common divisor of 72 and 204. How long is each loop, in minutes?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 5** | **B) 6** | **C) 10** | **D) 12** | **E) NOTA** |

1. Factor  completely.

|  |  |  |
| --- | --- | --- |
| **A) (x-2)(x-1)(x+1)** | **B) (x-2)(x+2)(x-1)** | **C) (x+2)(x-2)(x+1)** |
| **D) (x+2)(x-1)(x+1)** | **E) NOTA** |  |

1. The amount of fake blood in the house (in gallons) is equal to the larger solution of . How much blood is there, in gallons?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) -4** | **B) -3** | **C) 3** | **D) 4** | **E) NOTA** |

1. Two kids are standing in the corner of a room when they get scared by a zombie coming out of nowhere!! One kid starts running due north at 3 m/s, while the other kid runs due east at 4 m/s. Assume that they start running at the same time, and that the room is large enough for them to continue running at a constant pace without running into anything. How far apart are the two kids after 2 seconds?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 5 m** | **B)7 m** | **C) 10 m** | **D) 100m** | **E) NOTA** |

1. What is the sum of all divisors of 2012?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 1516** | **B) 3023** | **C) 3527** | **D) 3528** | **E) NOTA** |

1. When you are climbing up the stairs to the second floor, you notice a bunch of cockroaches on the steps. After initially freaking out, you realize they are fake and that the number of cockroaches on each step follows a pattern. On the first step, there are 3 cockroaches, on the second, there are 5, on the third, there are 9, and on the fourth, there are 17. How many cockroaches are sitting on the 6th step?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 32** | **B) 33** | **C) 64** | **D) 129** | **E) NOTA** |

1. If , what is ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 544630** | **B) 544640** | **C) 544644** | **D) 544648** | **E) NOTA** |

1. A rat (call him Rat #1) is at the point (202, -30). A second rat (Rat #2) is at (22, 90). Rat #1 travels 3 times as fast as Rat #2. If they start moving directly towards each other, they will meet at the point (a, b). Find a+b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 127** | **B) 132** | **C) 142** | **D) 157** | **E) NOTA** |

1. There are  skeletons in the haunted house, where . Find .

**A) B) 3 C) D) 10 E) NOTA**

1. An odd-looking dresser is in the shape of a cone. Find the volume, in cubic feet, if radius= 2ft and height= 4.5 ft. (Volume= )

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 3π** | **B) 6π** | **C) 9π** | **D) 18π** | **E) NOTA** |

1. Find the sum of the roots of .

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) -72** | **B) -22** | **C) 22** | **D) 72** | **E) NOTA** |

1. The oldest haunted house in America, the Fairbanks House in Dedham, Massachusetts, was built around 1640. It is rumored to be haunted by spirits of past residents. How many different prime factors does 1640 have?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 2** | **B) 3** | **C) 4** | **D) 6** | **E) NOTA** |

1. Scare E. Place Co. designs haunted houses for amusement. Two of their top designers are Nathan and Niral. Nathan and Niral, working together, can design 5 houses in 6 days. Niral, by himself, can design 1 house every 3 days. How many days does it take Nathan to design 5 houses by himself?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 2** | **B) 3** | **C) 5** | **D) 15** | **E) NOTA** |

1. How many of the following are true?
2. 0 is a whole number
3. =0
4. Dividing by zero is not allowed.
5. The line x=0 has slope 0.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 1** | **B) 2** | **C) 3** | **D) 4** | **E) NOTA** |

1. Jimmy and Joyce are having a screaming contest inside the haunted house. Jimmy initially screams at 80 decibels, but his loudness decreases by 4 decibels every second. Joyce’s scream registers at 70 decibels, but it only drops in volume by 2 decibels every second. After *x* seconds, their screams are at the same volume. What is *x*? (A decibel is a unit of volume.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A) 5** | **B) 6** | **C) 25** | **D) 60** | **E) NOTA** |