\_\_\_\_\_1. Simplify

 (A)  (B)  (C)  (D) 

\_\_\_\_ 2. Simplify 

 (A)  (B)  (C) 4 (D) 

\_\_\_\_\_3. Simplify $4\sqrt{7}-5\sqrt{28}$

1. $2\sqrt{7}$ (B) $-6\sqrt{7}$ (C) $14\sqrt{7}$ (D) $4\sqrt{7}-35\sqrt{2}$

\_\_\_\_\_4. Simplify $\sqrt[3]{-108}$

 (A) $-6$ (B) $3i\sqrt[3]{4}$ (C) $-3\sqrt[3]{4}$ (D) $-4\sqrt[3]{3}$

\_\_\_\_\_5. Simplify $\sqrt{-108y^{7}}$

 (A) $6y^{3}i\sqrt{3y}$ (B) $-6y^{3}i\sqrt{3}$ (C) $6y^{3}\sqrt{-3y}$ (D) $3yi\sqrt{6y^{5}}$

\_\_\_\_\_6. Solve 

 (A)  (B)  (C)  (D) no solution

\_\_\_\_ 7. Solve 

 (A)  (B) 

 (C)  (D) 

\_\_\_\_\_8. Solve 

 (A)  (B) 

 (C)  (D) 

\_\_\_\_\_9. Solve 

 (A)  (B)  (C)  (D) 

\_\_\_\_\_10. Solve 

 (A)  (B)  (C)  (D) 

\_\_\_\_\_11. Simplify 

(A)  (B)  (C)  (D) 

\_\_\_\_\_12. Simplify 

(A)  (B)  (C)  (D) 

\_\_\_\_\_13. Simplify 

(A)  (B)  (C)  (D) 

\_\_\_\_\_14. Simplify 

(A)  (B)  (C)  (D) 

\_\_\_\_\_15. Simplify 

(A)  (B)  (C)  (D) 

If a football is kicked straight upward, then the height  of the football in feet at time t in seconds is given by $h\left(t\right)=-16t^{2}+64t+10$.

|  |
| --- |
| 1. What is the average rate of change of the height of the football on the interval [2, 4]?
 |
| 1. How long does it take the football to return to earth (round to the nearest hundredth)?
2. How long is the ball above a height of 50 feet?
 |
| 1. How long does it take to reach the maximum height?
 |
| 1. What is the maximum height?
 |
|  |
| 1. What is the real world domain of the function?
2. What is the real world range of the function?
3. What is the height of the football 4 seconds after it is kicked?

Solve the following system of equations, show all your work. (use the graph if you would like)1. $y=-x^{2}-5$ $y=x^{2}+10x+3$
 |

Researchers surveyed 100 students on which superpower they would most like to have. This two-way table displays data for the sample of students who responded to the survey:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Fly** | **Invisibility** | **Totals** |
| **Male** | 29 | 9 | 38 |
| **Female** | 26 | 16 | 42 |
| **Totals** | 55 | 25 | 80 |

**Using the two-way table above, find the joint and marginal relative frequencies, round to two decimal places if necessary.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Fly** | **Invisibility** | **Totals** |
| **Men** | 25.  | 26.  | 27.  |
| **Women** | 28. | 29.  | 30.  |
| **Totals** | 31.  | 32.  | 1 |

**A gumball machine contains 5 pink gumballs, 10 yellow gumballs, and 7 blue gumballs. Find the probability of randomly selecting the following:**

|  |  |
| --- | --- |
| \_\_\_\_33. A pink or blue gumball a.   b.   c.   d.   | \_\_\_\_34. A yellow and then a blue gumball with replacement. a.   b.   c.   d.   |
|  \_\_\_\_35. A yellow gumball a.   b.   c.   d.   | \_\_\_\_36. A blue gumball and then a pink gumball without replacement. a.   b.   c.   d.   |

Use the chart to answer questions 37-44. **Round to the hundredth if necessary**

 (H = Drinks Hot Chocolate, C = Drinks Cider, $\overbar{H}$ = Doesn’t Drink Hot Chocolate, $\overbar{C}$ = Doesn’t Drink Cider)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Drinks Hot Chocolate | Doesn’t Drink Hot Chocolate | Total |
| Drinks Cider | 246 | 51 | 297 |
| Doesn’t Drink Cider | 88 | 15 | 103 |
| Total | 334 | 66 | 400 |

37. What is the probability of choosing someone that drinks hot chocolate? P(H)

38. What is the probability of choosing someone that doesn’t drink hot chocolate? P($\overbar{H}$)

39. What is the probability of choosing someone that doesn’t drink either? P($\overbar{H}$ ∩ $\overbar{C}$)

40. What is the probability of choosing someone that drinks both hot chocolate and cider? P(H ∩ C)

41. What is the probability of choosing someone that drinks cider given they drink hot chocolate? P(C|H)

42. What is the probability of choosing someone who doesn’t drink cider that drinks hot chocolate? P(H|$\overbar{C}$)

43. What is the probability of choosing someone that drinks hot chocolate or cider? P(H ∪ C)

44. What is the probability of choosing someone that doesn’t drink hot chocolate or cider? P($\overbar{H}$ ∪ $\overbar{C}$)