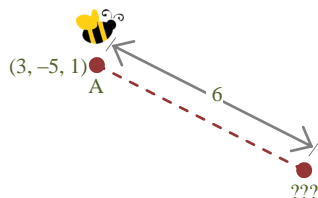
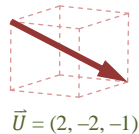


QAT Sample Questions

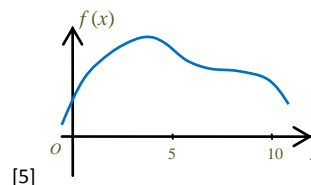
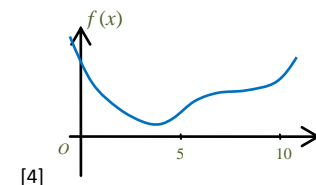
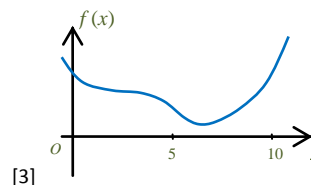
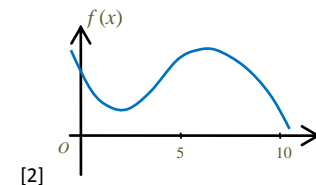
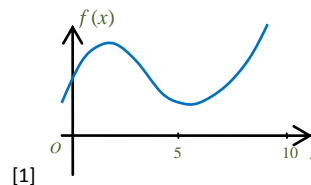
Sample Math Questions

1. In R^3 , let U be the vector $(2, -2, -1)$. A bee started from point $A(3, -5, 1)$ and flew in a straight line in the direction of the vector U . He stopped after he had flown for the distance of 6 units length. At which point did the bee stop?



- [1] $(5, -7, 0)$
 [2] $(7, -9, -1)$
 [3] $(15, -17, -5)$
 [4] $(9, 4, 7)$
 [5] $(1, -3, 2)$
2. Let A and B be square matrices of the same size. Let I be the identity matrix of the same dimension as A and B . Consider the following statements:
- $A(A + B) = (A + B)A$
 - $A^2(A + 2I) = (A + 2I)A^2$
 - $(A + B)^2 = A^2 + 2AB + B^2$
- Which statements are correct?
- [1] i. only
 [2] ii. only
 [3] ii. and iii.
 [4] All
 [5] None
3. Let $g(x) = \int_{-1}^{2x+4} e^{-t^2} dt$. Find the value of $g'(-2)$.
- [1] -1 [2] 0 [3] 1 [4] 2
 [5] 4

4. Let $f(x) = x^3 - 12x^2 + 36x + 8$. Which of the following best depicts the graph of $f(x)$?



5. The differential equation $2\frac{dy}{dx} + x^2y = 2x + 5$, $y(0) = 4$ is:
- [1] linear
 [2] nonlinear
 [3] linear with fixed constant
 [4] linear and homogeneous
 [5] underterminable to be linear or nonlinear
6. Two balls are randomly selected from an urn containing five red balls, three blue balls, and two black balls. What is the probability that the two selected balls have different colors?
- [1] $1/9$
 [2] $8/9$
 [3] $14/45$
 [4] $31/45$
 [5] $1/2$
7. If X is a Normal random variable with mean 2 and variance 4, what is the sum of mean and variance of $3 - 2X$?
- [1] -12
 [2] -6
 [3] 6
 [4] 8
 [5] 15

QAT Sample Questions

8. Given the following data:
112, 121, 126, 108, 141, 104, 136, 134, 121, 118,
143, 147, 134, 120, 131, 133, 118, 125, 151, 147,
137, 132, 124, 110, 130, 136, 128, 120, 121, 120
- What are the mode and median?
- [1] mode = 120, median = 126
[2] mode = 121, median = 127
[3] mode = 121.5, median = 128
[4] mode = 121.5, median = 127
[5] none of above
9. Given the following data:
102, 40, 27, 108, 124, 113, 143, 100, 115, 128
- If $\sum_{i=1}^{10} X_i^2 = 112600$, what is the sample variance?
- [1] 1260
[2] 1400
[3] 1575
[4] 1800
[4] 2100
10. Suppose data are normally distributed with a mean of 100 and a variance of 400. Which of the following is closest to the 95% confidence interval?
- [1] [80,120]
[2] [70,140]
[3] [60,140]
[4] [50,150]
[5] [40,160]

Sample Critical Reasoning Questions

11. There are five pieces of chain. Each piece is made of four links. What is the smallest number of cuts and mends you need to make to produce a circular chain with all 20 links?
- [1] 3
[2] 4
[3] 5
[4] 6
[5] 8
12. There are five contestants in the 100-meter butterfly swimming contest. Pete finished twelve seconds before Pat and forty seconds before Penny. Of the two female contestants, Penny finished twenty seconds after Pam. Paul is good at backstroke but not at butterfly, which made him finished ten seconds after Pat. Who finished third in the swimming contest?
- [1] Pam
[2] Pat
[3] Paul
[4] Penny
[5] Pete

Solutions

1. [2]
2. [2]
3. [4]
4. [1]
5. [1]
6. [4]
7. [5]
8. [2]
9. [2]
10. [3]
11. [3]
12. [1]