Hành trang vững vàng

EXAM FOR HOMC 8

TEST 1

Q1. Suppose a, b are two numbers such that $a^2+b^2+8a-14b+65=0$. Find the value of a^2+ab+b^2.

A. 37; B. 102; C. 5; D. 100; E. None of the above.

Q2. Find the remainder of 3^{2000} when it is divided by 13.

A. 3. B. 6. C. 7. D. 5. E. None of the above.

Q3. Given triangle *ABC*, *AB* = 8, *BC* = 7, *CA* = 6. Extend *BC* to *P* such that $\Delta PAB \sim \Delta PCA$, then the length of *PC* is

A. 7; B. 8; C.9; D. 10; E. 11.

Q4. How many the positive integer values of *n* such that $n^2+19n+48$ is a perfect square number?

A. 2. B.1 C.3. D. 0. E. None of the above.

Q5. The number of positive integer solutions (*x, y, z*) for the system of simultaneous equations $\begin{cases} xy+yz=63 \\ xz+yz=23 \end{cases}$ is

A. 1; B.2; C.3; D.4; E. None of the above.

Q6. Find the integer roots of equation $2^x-3=65y$.

Q7. Find the value of expression $P=\dfrac{(4\times7+2)(6\times9+2)(8\times11+2)\cdots(100\times103+2)}{(5\times8+2)(7\times10+2)(9\times12+2)\cdots(99\times102+2)}$

Q8. Let $\overline{abcdef}$ be a 6 – digit integer such that $\overline{defabc}$ is 6 times the value of $\overline{abcdef}$. Find the value of $a+b+c+d+e+f$.

Q9. If $x^5-5qx+4r$ is divisible by $(x-2)^2$, find the values of *q* and *r*.

Q10. Let *x, y* are positve numbers such that *x* + *y* = *1*. Find the minimum value of expression $P=\left(1-\dfrac{1}{x^2}\right)\left(1-\dfrac{1}{y^2}\right)$.

Q11. Suppose that triangle ABC has $AB > AC$, $AD \perp BC$ at D. P is an arbitrary point on AD different from A and D, prove that $PB - PC > AB - AC$.

Q12. Find the pair of integer numbers such that $x^2 + 2y^2 + 3xy + 3x + 5y = 15$.

Q13. Find the number of roots of equation $\left[\frac{x}{2}\right] + \left[\frac{2x}{3}\right] = x$

Q14. In the isosceles right triangle ABC, $AB = 1$, $A = 90^0$, E is midpoint of the leg AC. The point F is on the base BC such that $EF \perp BE$. Find the area of ΔCEF.

Q15. If a, b, c denote the lengths of sides of a triangle, satisfying $a + b + c = 1$, prove that

$$a^2 + b^2 + c^2 + 4abc < \frac{1}{2}.$$