Practice Cayley Number 2

1. If $x = -2$ and $y = -5$ then $(x - y)(x + y)$ equals

   a) 40 b) 21 c) 0 d) -21 e) -49

2. What area is enclosed by the x axis, the y axis and the line $5x - 9y - 90 = 0$

   a) 80 b) 90 c) 100 d) 160 e) 180

3. Rectangle $ABCD$ has an area 144. Points X, Y, Z, and W are chosen on consecutive sides of the rectangle so that $AX : XB = BY : YC = CZ : ZD = DW : WA = 2 : 1$. What is the area of the parallelogram $XYZW$?

   a) 60 b) 72 c) 80 d) 92 e) 96

4. If a and b are distinct real numbers such that $a(x - a) = b(x - b)$ then x equals

   a) $\frac{a+b}{2}$ b) $\frac{b-a}{2}$ c) $\frac{a^2+b^2}{a+b}$ d) $a + b$ e) $a - b$

5. The point of intersection of the lines $\frac{x}{4} + \frac{y}{6} = 1$ and $\frac{x}{6} + \frac{y}{4} = 1$ is

   a) (5,5) b) (2,3) c) (3,3) d) (4,6) e) (2.4, 2.4)

6. If 3 of the 4 vertices of a parallelogram are $A(3, 2)$, $B(11, 8)$ and $C(5, 16)$, what is the area of the parallelogram?

   a) 96 b) 100 c) 120 d) 144 e) 160

7. If $27^{27} + 27^{27} + 27^{27} = 3^k$ then k equals

   a) 81 b) 82 c) 243 d) 244 e) 729

8. If N, $N + 1$ and $N + 2$ are the smallest 3 consecutive integers, greater than 10 , such that the first is divisible by 7, the second by 8 and the last by 9, then

   a) $100 < N < 200$ b) $200 < N < 300$ c) $300 < N < 400$ d) $400 < N < 500$ e) $500 < N < 600$

9. The coordinates of points A, B and C are $A(-4, 9)$, $B(k, 0)$ and $C(8, 3)$. What value of k causes the sum $AB + BC$ to be as small as possible?

   a) 2 b) 4 c) 5 d) 6 e) 8

10. A point $P(x, y)$ with both x and y coordinates integral is called a lattice point. How many lattice points are inside or on the closed figure given by the equation $|x| + |y| = 100$?

    a) 20601 b) 20604 c) 20201 d) 20197 e) 20397