1. The sum of all values of λ for which the lines $2x+y+1=0,\ 3x+2\lambda y+4=0,\ x+y-3\lambda=0$ are concurrent, is

(1) $\frac{1}{4}$
(2) $\frac{1}{2}$
(3) $\frac{7}{2}$
(4) $\frac{7}{12}$

2. Three straight lines $2x+11y-5=0$, $24x+7y-20=0$ and $4x-3y-2=0$

(1) form a triangle
(2) are only concurrent
(3) are concurrent with one line bisecting the angle between the other two
(4) parallel lines
(5) None of the above

3. If the lines $x+3y-9=0,\ 4x+by-2=0$ and $2x-y-4=0$ are concurrent, then the equation of the line passing through the point (b, 0) and concurrent with the given lines, is

(1) $2x+y+10=0$
(2) $4x-7y+20=0$
(3) $x-y+5=0$
(4) $x-4y+5=0$

4. The base of an equilateral triangle is along the line given by $3x+4y=9$. If a vertex of the triangle is $(1,2)$, then the length of a side of the triangle is:

(1) $\frac{2\sqrt{3}}{15}$
(2) $\frac{4\sqrt{3}}{15}$
(3) $\frac{4\sqrt{3}}{5}$
(4) $\frac{2\sqrt{3}}{5}$

5. The coordinates of the foot of the perpendicular drawn from the point (3, 4) on the line $2x+y-7=0$ is

(1) $\left(\frac{9}{5}, \frac{17}{5}\right)$
(2) $(1,\ 5)$
(3) $(-5,\ 1)$
(4) $(1,\ -5)$

6. A ray of light passes through the points $A(2,\ 3)$ reflected at a point B on the line $x+y=0$ and then, passes through $(5,\ 3)$. Then the coordinates of B are

(1) $\left(\frac{1}{3}, -\frac{1}{3}\right)$
(2) $\left(\frac{2}{5}, -\frac{2}{5}\right)$
(3) $\left(\frac{1}{13}, -\frac{1}{13}\right)$
(4) None of these

7. The equation of the image of line $y=x$ with respect to the line mirror $2x-y=1$ is

(1) $y=7x-5$
(2) $y=7x-6$
(3) $y=3x-7$
(4) $y=6x-5$

8. The line segment joining $A(5,0)$ and $B(10\cos\theta, 10\sin\theta)$ is divided internally in the ratio $2:3$ at P. If θ varies, then the perimeter of locus of P is

(1) 4π units
(2) 16π units
(3) 8π units
(4) 6π units

9. A point P moves in such a way that sum of its perpendicular distances from two perpendicular lines in its plane is always 2. Then find the area of region bounded by locus of P.

10. If $A(2,-3)$ and $B(-2,1)$ are two vertices of a triangle and third vertex moves on the line $2x+3y=9$, then the locus of the centroid of the triangle is

(1) $2x-3y=1$
(2) $x-y=1$
(3) $2x+3y=1$
(4) $2x+3y=3$