1. The gradient of a straight line perpendicular to the line $+ 3y + 7 = 0$

    A   -3

    B $-\frac{1}{3}$

    C $\frac{1}{3}$

    D   3

2. P and Q are the points (2, 3) and (-1, 4). A line perpendicular to PQ will have gradient

    A   -3

    B $-\frac{1}{3}$

    C $\frac{1}{3}$

    D   3

3. State which one of the following is **false**.
    The function sin x has the same period as the function

    A   cos x

    B   sin $2x$

    C   2 sin x

    D $\sin\left[\frac{\pi}{2} + x\right]$

4. Given that $f(x) = 2x$ and $g(x) = 4x + 1$, then $(f \circ g)(x)$ equals

    A $6x + 1$

    B $8x + 1$

    C $8x + 2$

    D $8x^2 + 1$

5. $\lim\limits_{h\to 0} \dfrac{(2 + h)^2 - 4}{h}$ is

    A   -2

    B   0

    C   1

    D   4

6. The line through the points (2, -1) and (4, 3) has equation

    A $y - 2x + 1 = 0$

    B $y - 2x + 3 = 0$

    C $y - 2x + 5 = 0$

    D $2y - x - 2 = 0$

7. The period of tan $3x°$, $x \varepsilon R$, is

    A   60

    B   120

    C   180

    D   360

8. The range of the function $f : x \to 4 + 3 \sin^2 x$, $x \varepsilon R$, is

    A $\{y : 0 \le y \le 3, y \varepsilon R\}$

    B $\{y : 1 \le y \le 7, y \varepsilon R\}$

    C $\{y : 3 \le y \le 5, y \varepsilon R\}$

    D $\{y : 4 \le y \le 7, y \varepsilon R\}$

9.   The equations of four straight lines are

(1) $3x - y = 0$
(2) $3x + y - 2 = 0$
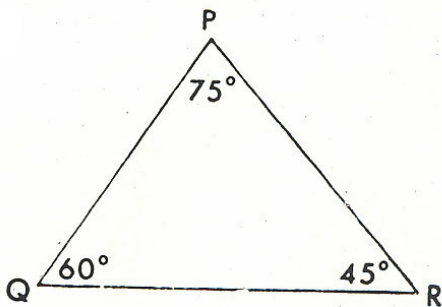(3) $x - 3y + 6 = 0$
(4) $x + 3y - 4 = 0$

Which pairs of lines are perpendicular?

A   only (1) and (2)
B   only (1) and (4)
C   only (2) and (3)
D   both [(1) and (4)] and [(2) and (3)]

10.

PR:PQ equals

A   3:4
B   4:3
C $\sqrt{2}:\sqrt{3}$
D $\sqrt{3}:\sqrt{2}$