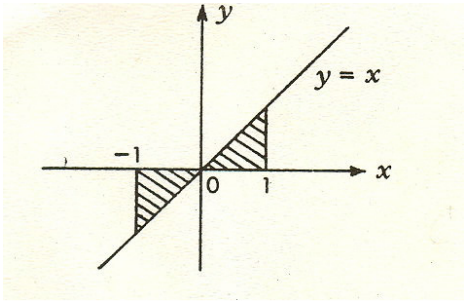
1.



Which of the following gives the numerical value of the shaded area?

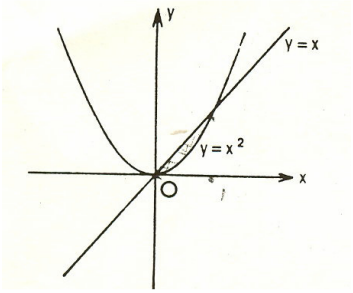
(1) $\int_{-1}^{1} x\,dx$

(2) $\int_{-1}^{0} x\,dx + \int_{0}^{1} x\,dx$

(3) $2\int_{0}^{1} x\,dx.$

A (1) only
B (2) only
C (3) ony
D (1) and (2) only
E (1), (2) and (3)

2.



The sketch shows the curve $y = x^2$ and the straight line $y = x$.
The maximum value of

$\int_{0}^{h} (x - x^2)\,dx$, $h > 0$, occurs when h equals

A $\frac{1}{4}$

B $\frac{1}{3}$

C $\frac{1}{2}$

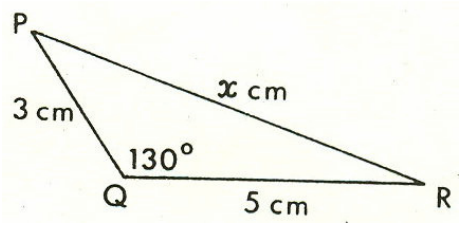
D 1

E 2

3. $x = -1$ is one root of $f(x) = 0$ and $f'(x) = 2x + 3$. The other root of $f(x) = 0$ is

A 2
B 0
C $-\frac{3}{2}$
D − 2
E − 3

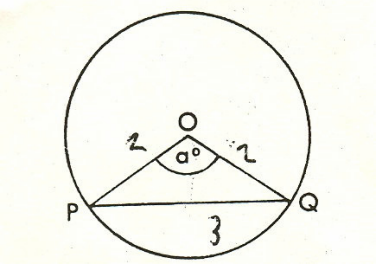
4.



The dimensions of triangle PQR are shown in the diagram.
x^2 equals

A 4 cos 130°
B 34 − 30 cos 50°
C 34 + 30 cos 50°
D 34 − 30 cos 40°
E 34 + 30 cos 40°

5.



O is the centre of a circle and OP, OQ are radii.

If PQ = 3 and OP = 2 the value of cos $a°$ is

A $-\frac{1}{4}$

B $-\frac{1}{8}$

C $\frac{1}{4}$

D $\frac{1}{2}$

E $\frac{5}{8}$

6. The length of the radius of the circle $x^2 + y^2 + 6x + 8y + 7 = 0$ is

A $3\sqrt{2}$
B $4\sqrt{2}$
C $\sqrt{93}$
D $\sqrt{107}$
E none of these

7. $2x + 1$ is a factor of $2x^3 - bx^2 + x + 2$. b is equal to

A 9
B 7
C 5
D -5
E -7

8. $\frac{\sin x \cos x}{\tan x}$ equals

A $\sin^2 x$
B $\sin x$
C $\cos^2 x$
D $\cos x$
E none of these

9. The length of arc PQ is a quarter of the circumference of a circle with centre O. The size of angle POQ in radians is

A $\frac{\pi}{8}$

B $\frac{\pi}{4}$

C $\frac{\pi}{2}$

D π

E indeterminable without further information

10. Given that $x + 1$ is a factor of $px^3 + qx^2 + px + q$, then

A $p + 2q + 1 = 0$
B $2q - p + 1 = 0$
C $P = -Q$
D $p = q$
E p *and* q may take values unrelated to each other.

MATHS HIGHER - WORKSHEETS