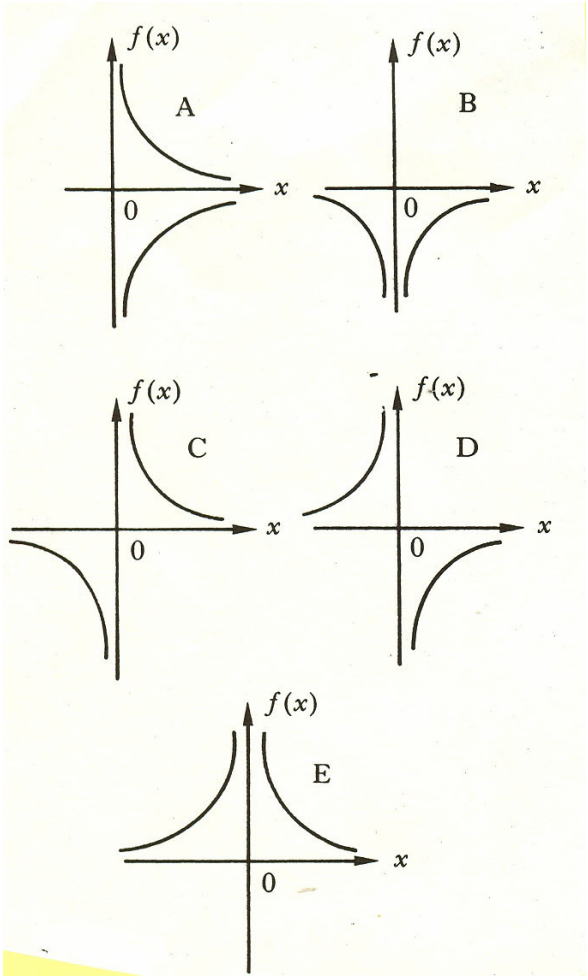
1. Which of the graphs below is most likely to show the function $f: x \to x^{-3}, x \in R$?



2. Given that $f'(x) = 2x - \frac{4}{x^2}$ and $f(-1) = 2$, then $f(x)$ equals

A $\frac{8}{x^3} - 8$

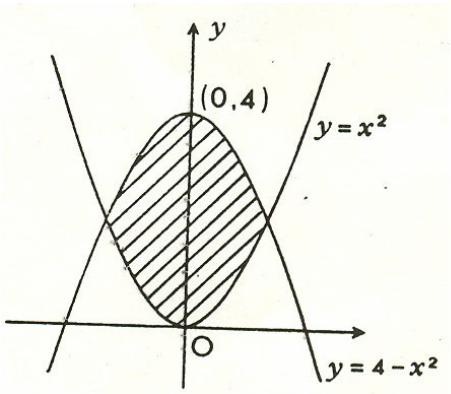
B $\frac{8}{x^3} + 8$

C $x^2 + \frac{8}{x^3} + 9$

D $x^2 + \frac{4}{x} + 5$

E $x^2 + \frac{4}{x} + 7$

3.



The area enclosed by the curves $y = x^2$ and $y = 4 - x^2$ (represented in the diagram by the shaded region) is given by

A $\int_0^4 (4 - 2x^2)\ dx$

B $\int_{-2}^2 (4 - 2x^2)\ dx$

C $\int_{-\sqrt{2}}^{\sqrt{2}} (4 - 2x^2)\ dx$

D $\int_{-\sqrt{2}}^{\sqrt{2}} (2x^2 - 4)\ dx$

E $\int_{-2}^2 4\ dx$

4. As x increases in the interval $\pi < x < \frac{3\pi}{2}$, $\sin x$

A increases as $\cos x$ decreases
B decreases as $\cos x$ increases
C increases as $\cos x$ increases
D decreases as $\cos x$ decreases
E equals $\cos$

5. The circle $x^2 + y^2 + 11x + 7y = 10 = 0$ cuts the x-axis at the points P and Q. The length of PQ is

A 1
B 3
C 7
D 9
E 11

6. The sum of the roots of the equation $3x^2 - 5x + 7 = 0$ is

A $\frac{7}{3}$
B $\frac{5}{3}$
C $-\frac{5}{3}$
D $-\frac{7}{3}$
E None of these values.

7. Given that k is a constant of integration, $\int x^{\frac{1}{2}}\,dx$ equals.

A $\frac{1}{2x^{\frac{1}{2}}} + k$
B $\frac{1}{x^{\frac{1}{2}}} + k$
C $\frac{1}{2}x^{3/2} + k$
D $\frac{2}{3}x^{3/2} + k$
E $\frac{3}{2}x^{3/2} + k$

8. Given that the point $(p \sin \theta, p \cos \theta)$ lies on the circle

$x^2 + y^2 = 16$, and $p > 0$, then p equals

A 1
B 2
C 4
D 8
E 16

MATHS HIGHER - WORKSHEETS