

1. State whether the following functions are EVEN, ODD, or NEITHER. Show all working.

(a) $y = 2x^2$	(b) $y = 2x^3$	(c) $y = x^4 - x^2 + 1$	(d) $y = x - x^3 + 1$
(e) $y = x $	(f) $y = \frac{x}{x^2 - 1}$	(g) $y = (x + 1)^2$	

2. (a) Sketch the graph of $y = x^3$, $0 \leq x \leq 2$. Show the coordinates of the endpoints.

(b) The above function is part of an even function $f(x)$, defined in the domain $-2 \leq x \leq 2$. Draw a sketch of $y = f(x)$.

(c) Write a piecemeal description of the function $f(x)$.

-
3. (a) Sketch the graphs of $y = \sin x$ and $y = \cos x$ on separate number planes, each in the domain $-180^\circ \leq x \leq 180^\circ$.

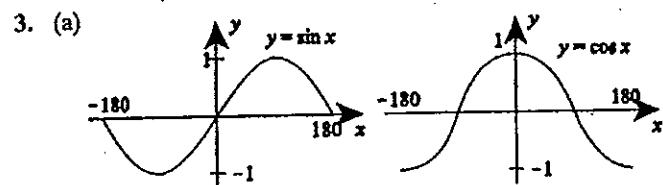
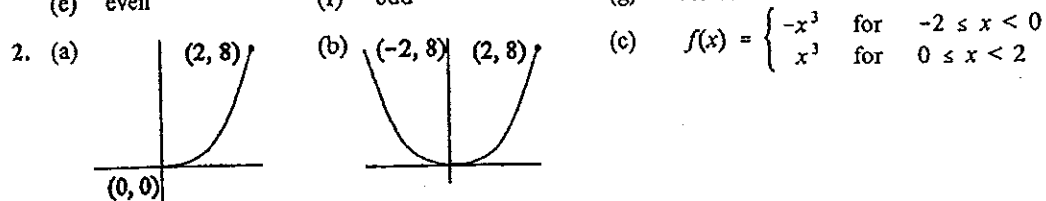
(b) Hence decide if the sine and cosine functions are odd, even or neither.

- (c) Remembering that $\sin 45^\circ = \cos 45^\circ = \frac{1}{\sqrt{2}}$, write down the values of $\sin(-45^\circ)$ and $\cos(-45^\circ)$.

4. Show that if an odd function is defined for $x = 0$, then its graph must pass through the origin.

ANSWERS:

1. (a) even (b) odd (c) even (d) neither
 (e) even (f) odd (g) neither



(b) sine is odd; cosine is even

(c) $\sin(-45^\circ) = -\frac{1}{\sqrt{2}}; \cos(-45^\circ) = \frac{1}{\sqrt{2}}$