

Dr. Elzein Elzein

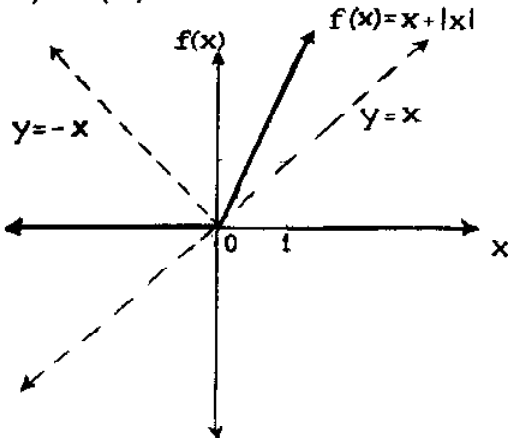
GRAPHS

Solutions by Sami El Hosri

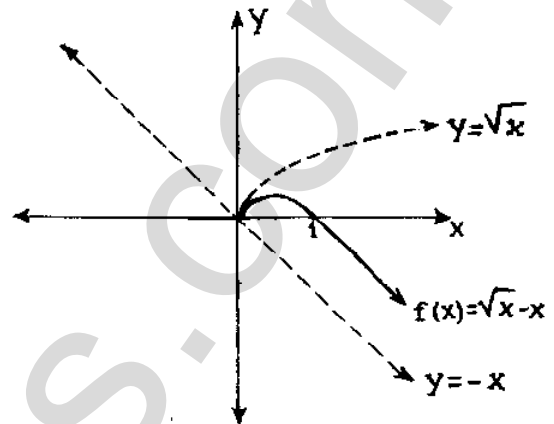
Exercises 30(a)

Q.1)

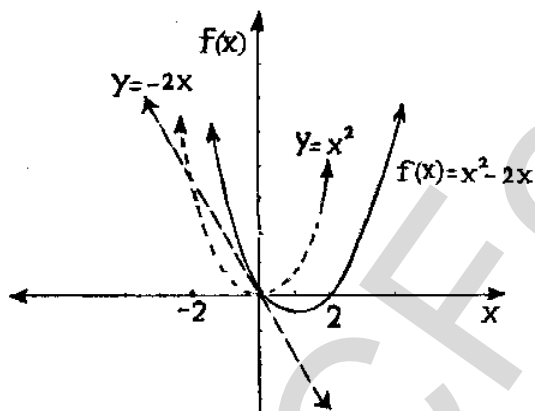
a) $f(x) = x + |x|$



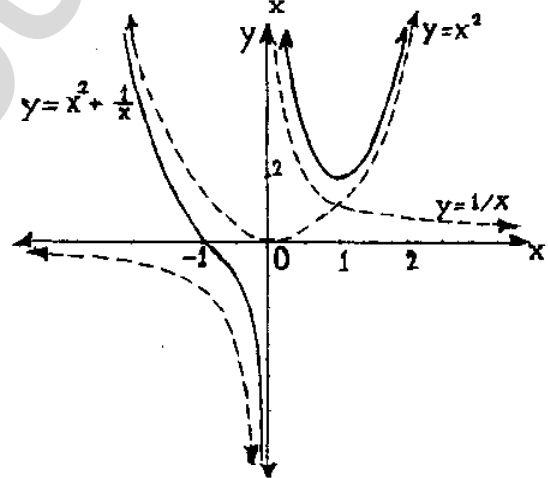
b) $f(x) = \sqrt{x} - x$



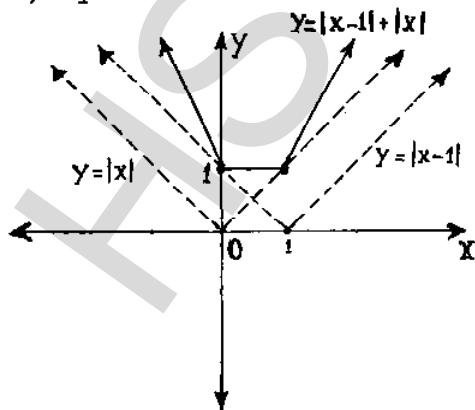
c) $f(x) = x^2 - 2x$



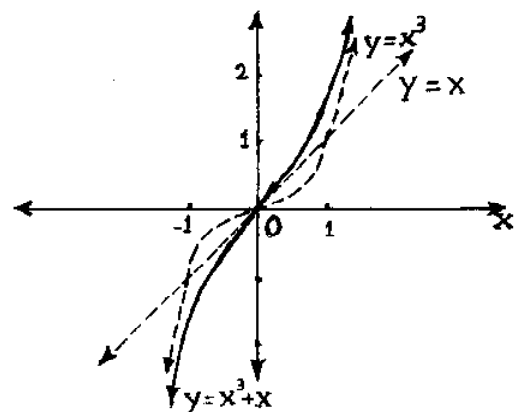
d) $y = x^2 + \frac{1}{x}$



e) $y = |x - 1| + |x|$



f) $y = x^3 + x$

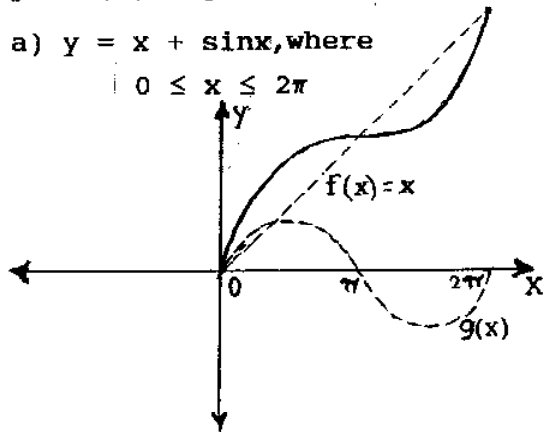


Q.2)

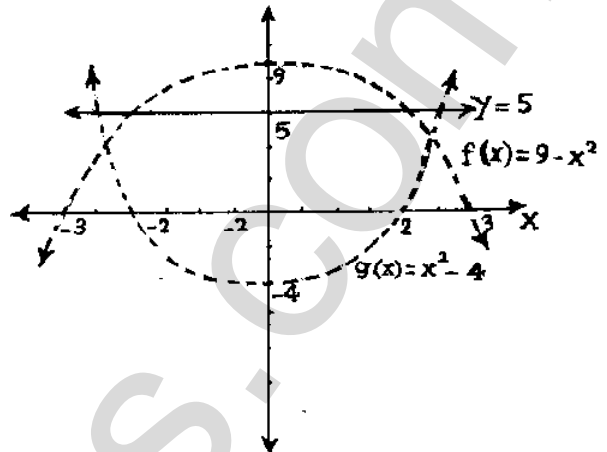
$$y = f(x) + g(x)$$

a) $y = x + \sin x$, where

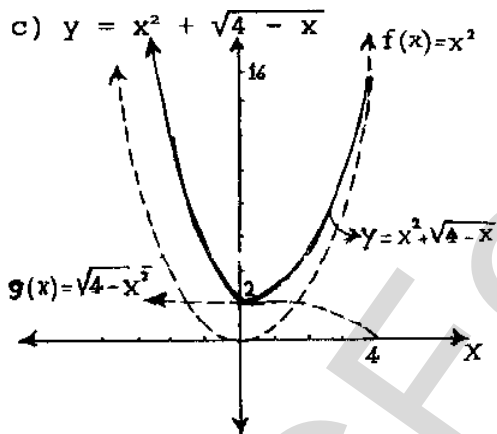
$$0 \leq x \leq 2\pi$$



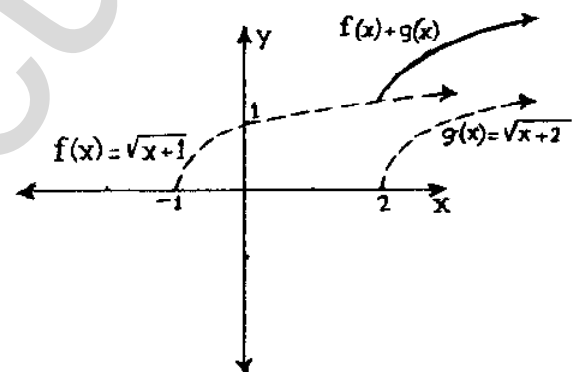
$$b) y = 9 - x^2 + x^2 - 4 = 5$$



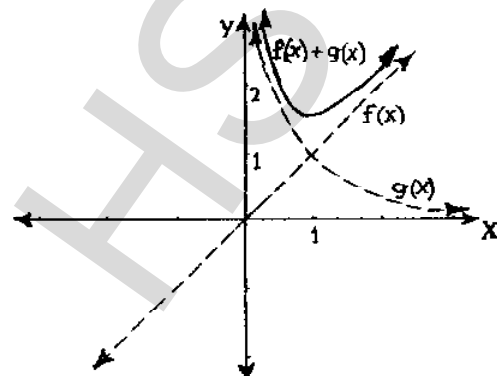
$$c) y = x^2 + \sqrt{4-x}$$



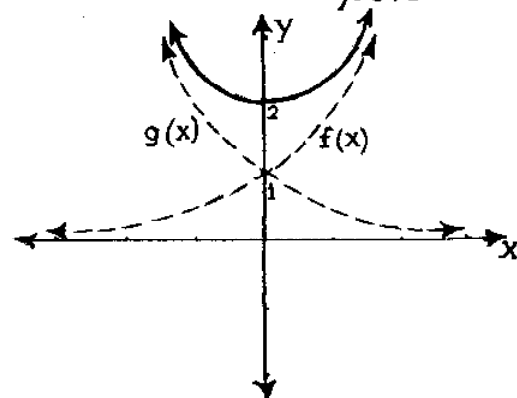
$$d) y = \sqrt{x+1} + \sqrt{x-2}$$



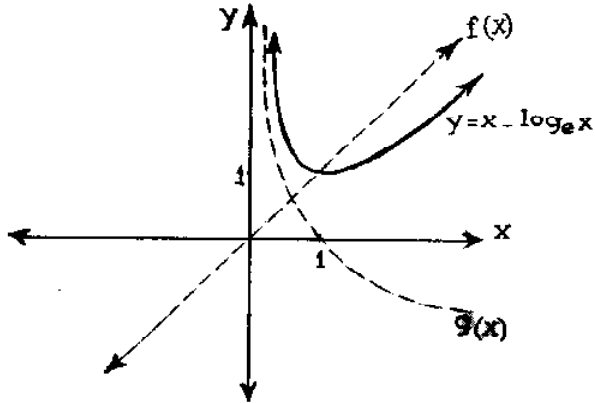
$$e) y = x + \frac{1}{\sqrt{x}}$$



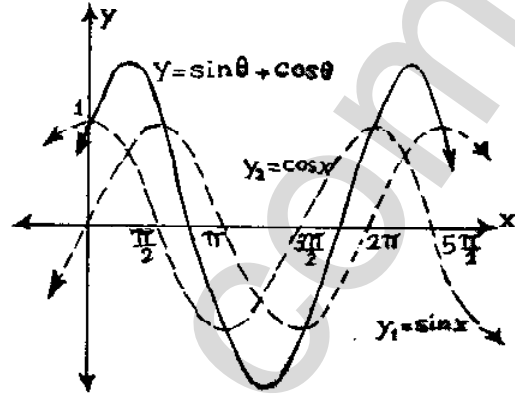
$$f) y = e^x + e^{-x}$$



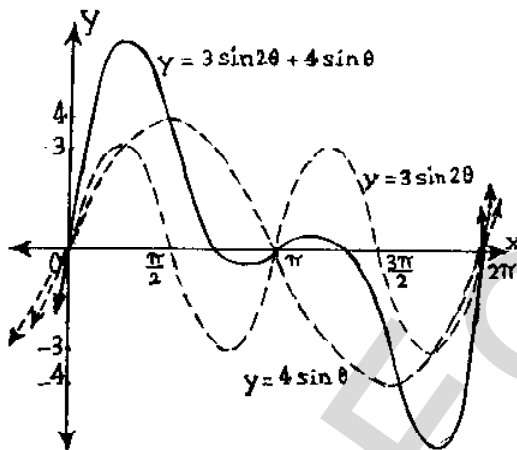
g) $y = x - \log_e x$



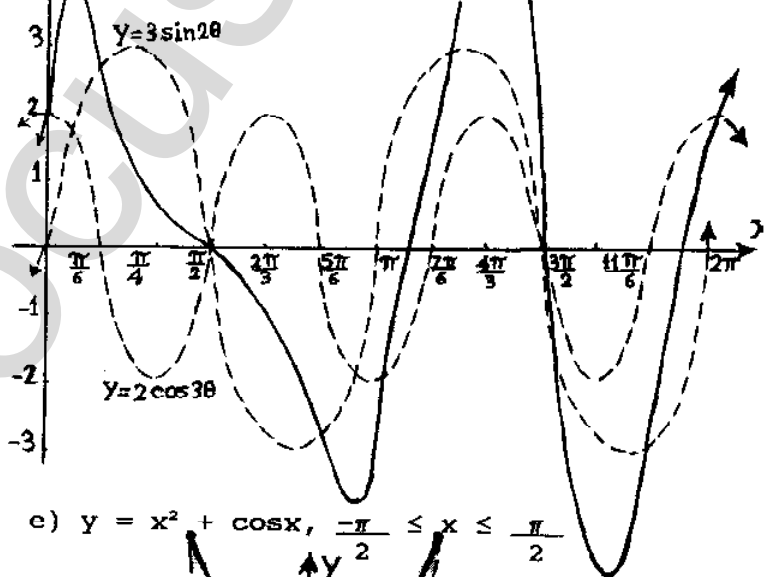
Q.3)a) $y = \sin \theta + \cos \theta$



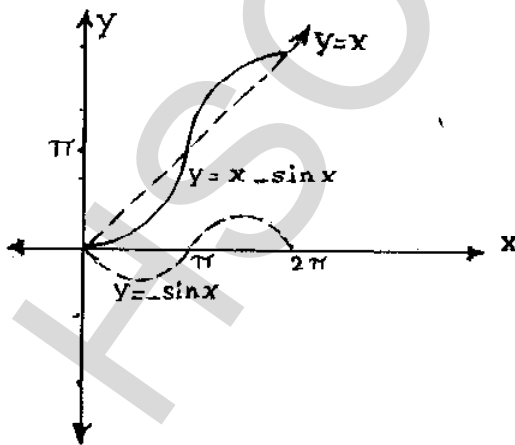
b) $y = 3\sin 2\theta + 4\sin \theta$



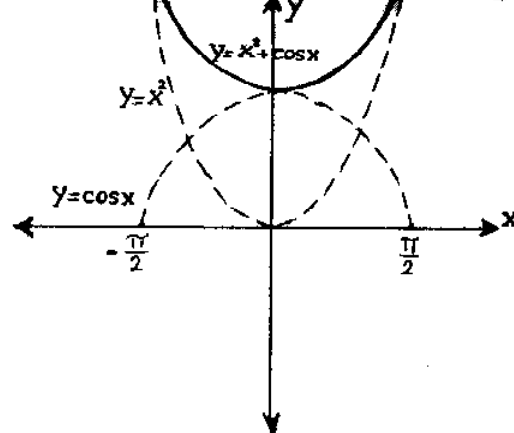
c) $y = 2\cos 3\theta + 3\sin 2\theta$



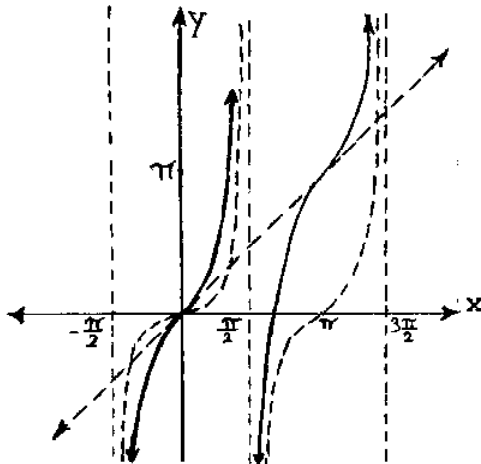
d) $y = x - \sin x, 0 \leq x \leq 2\pi$



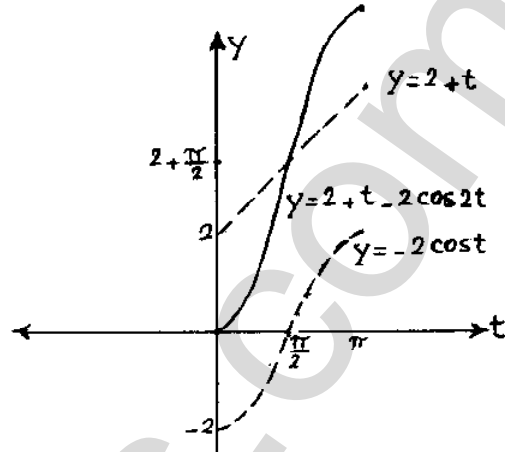
e) $y = x^2 + \cos x, -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$



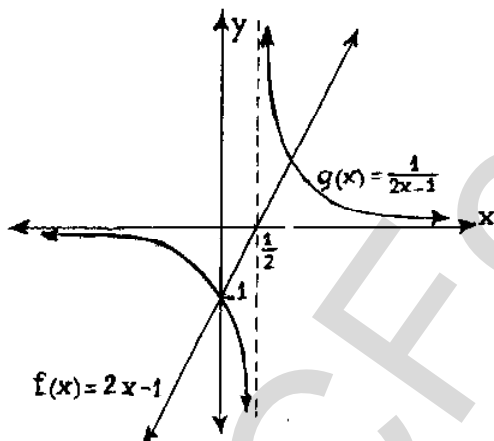
f) $y = x + \tan x$



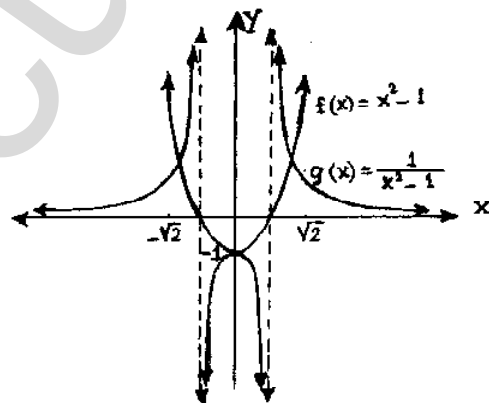
g) $y = 2 + t - 2\cos t$,
where $0 \leq t \leq \pi$



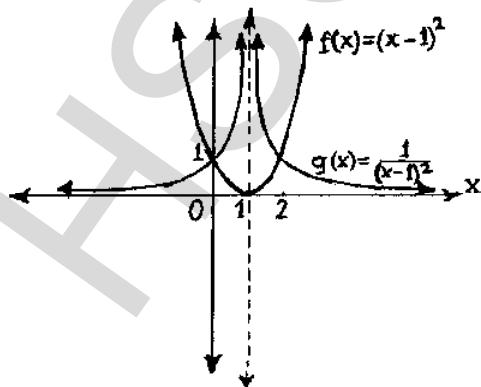
Q.4) a) $f(x) = 2x - 1$
 $g(x) = \frac{1}{2x - 1}$



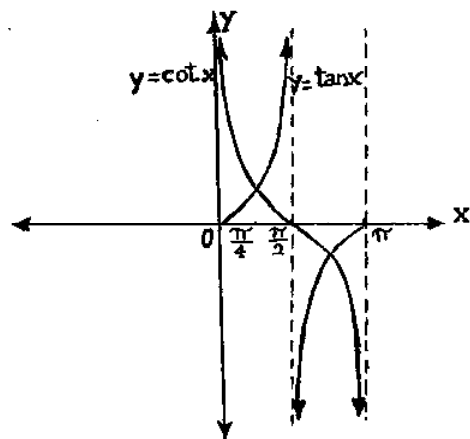
b) $f(x) = x^2 - 1$
 $g(x) = \frac{1}{x^2 - 1}$



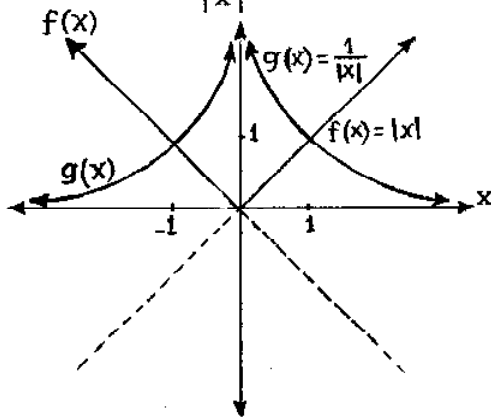
c) $f(x) = (x - 1)^2$
 $g(x) = \frac{1}{(x - 1)^2}$



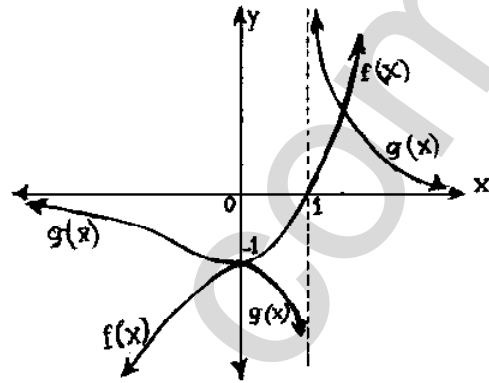
d) $f(x) = \tan x$
 $g(x) = \cot x, 0 \leq x \leq \pi$



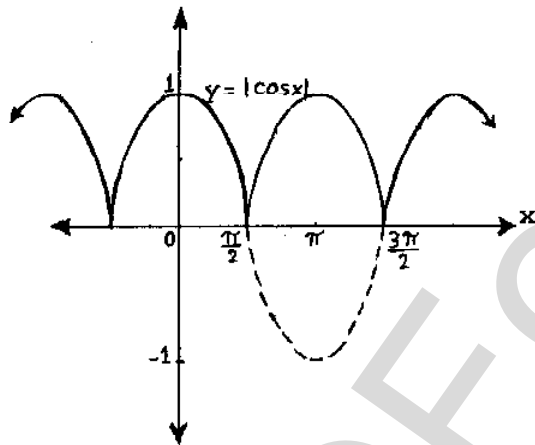
e) $f(x) = |x|$
 $g(x) = \frac{1}{|x|}$



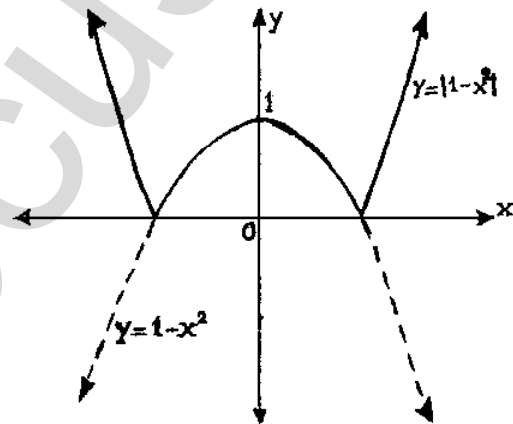
f) $f(x) = x^3 - 1$
 $g(x) = \frac{1}{x^3 - 1}$



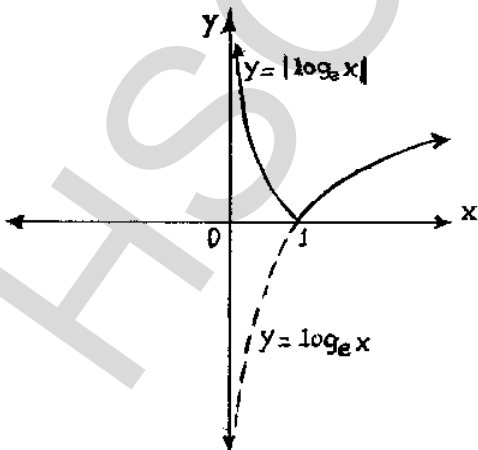
Q.5) a) $y = |\cos x|$



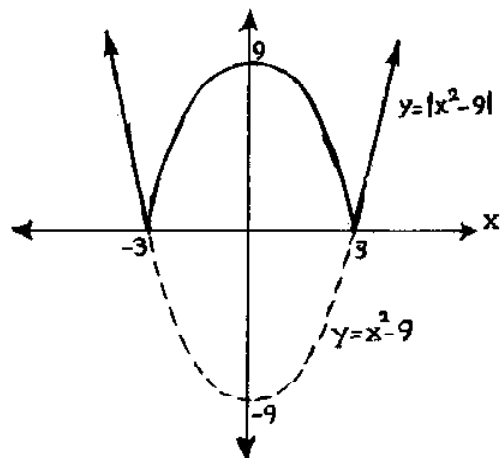
b) $y = |1 - x^2|$



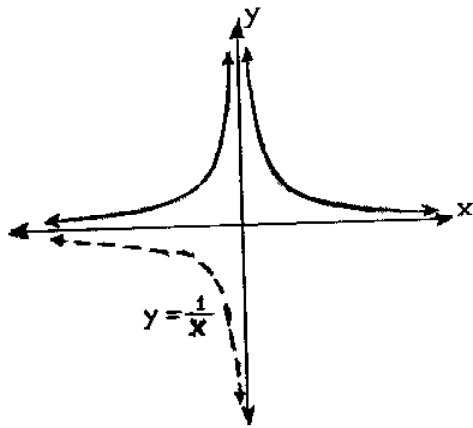
c) $y = |\log_e x|$



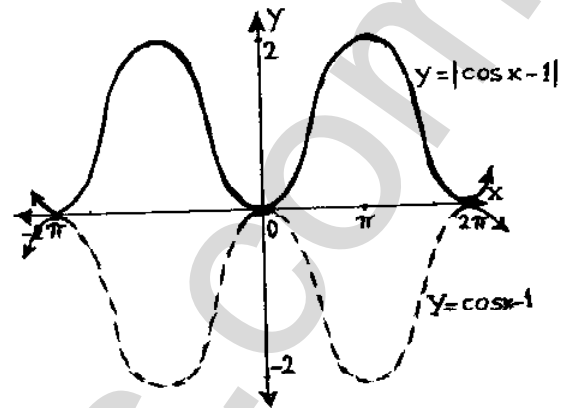
d) $y = \sqrt{(x^2 - 9)^2} = |x^2 - 9|$



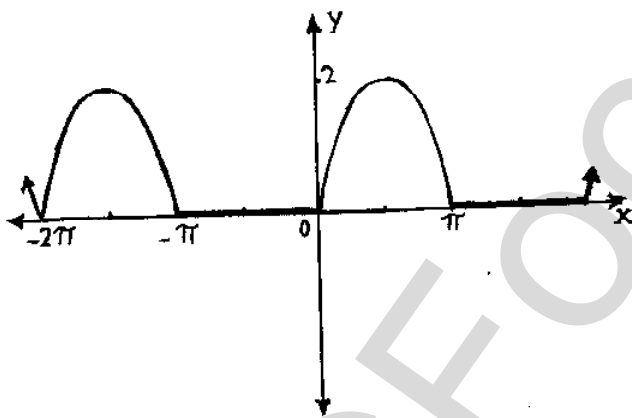
e) $y = \frac{1}{|x|}$



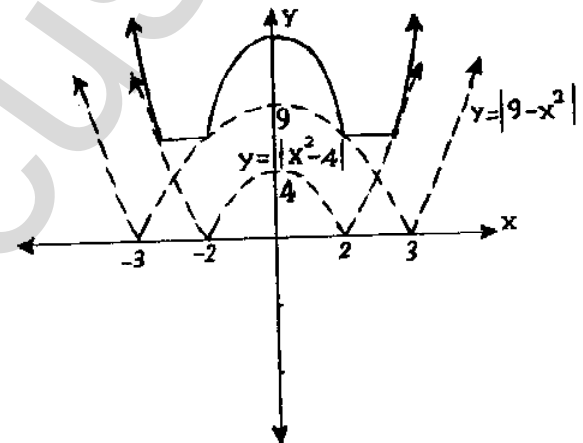
f) $y = \frac{\sqrt{(\cos x - 1)^2}}{|\cos x - 1|}$



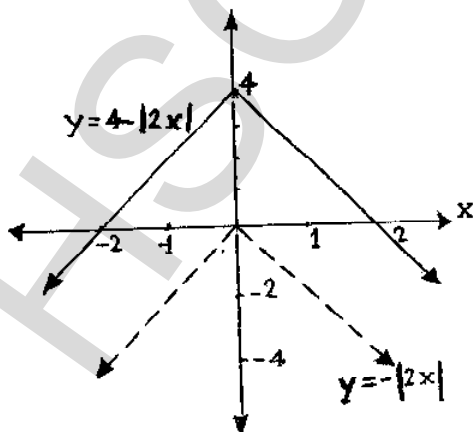
Q.6)a) $y = \sin x + |\sin x|$



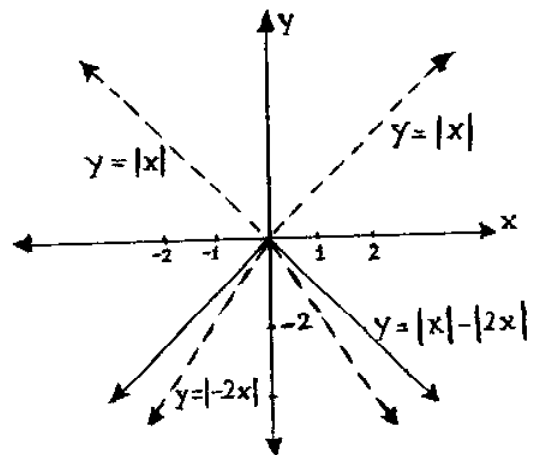
b) $y = |9 - x^2| + |x^2 - 4|$



c) $y = 4 - |2x|$



d) $y = |x| - |2x|$



e) $y = 2 + |\log_e x|$

