* $\sin^{-1}(x)+\sin^{-1}(y)=\pi/2$ then $\pi/2 + 0$
    a) 1
    b) 2
    c) $\frac{1}{2}$
    d) -2

    Ans: b)

* $\cos^{-1}(x)+\cos^{-1}(y)+\cos^{-1}(z)=\pi$ then $x^2+y^2+z^2+2xyz$ is
    a) 1
    b) 2
    c) 3
    d) 0

    Ans: a)

* $\sin(2\sin^{-1}(0.8))$ =
    a) Sin 1.2
    b) 0.96
    c) 0.48
    d) Sin 1.6

    Ans: b)

* $\sin^{-1}\left(\sqrt{8}/3\right) + \sin^{-1}\left(1/3\right)$ =
    a) $\frac{\pi}{6}$
    b) $\frac{\pi}{2}$
    c) $\frac{\pi}{4}$
    d) $\frac{2\pi}{3}$

    Ans: b)

* Simplified form of $\tan^{-1}\left(\frac{x}{y}\right) - \tan^{-1}\left(\frac{x-y}{x+y}\right)$ is
    a) 0

b) $3\pi/4$
c) $\pi/2$
d) $\pi/4$

Ans: d)

* The value of $\sin[\cot^{-1}\cos\tan^{-1}x]$ is
  a) $\sqrt{\frac{1+x^2}{2+x^2}}$
  b) $\sqrt{\frac{2+x^2}{1+x^2}}$
  c) $\sqrt{\frac{x^2-2}{x^2+1}}$
  d) $\sqrt{\frac{x^2-1}{x^2-2}}$

  Ans: a)

* $(\cos^{-1}(x))^2 - (\sin^{-1}(x))^2 \geq 0$ then $x \in$
  a) $\left[-1, \frac{1}{\sqrt{2}}\right]$
  b) $[-1,\ 1]$
  c) $\left[\frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right]$
  d) $\left[-1, \frac{1}{\sqrt{2}}\right]$

  Ans: a)

* If α, β are roots of $x^2+7x+K(K-3)=0$, $K \in (0,3)$ then $(\tan^{-1}\alpha) + (\tan^{-1}(\beta) + (\cot^{-1}\alpha) + (\cot^{-1}(\beta))$ is
  a) π
  b) $\pi/2$
  c) 0
  d) $-\pi$

  Ans: c)

* Number of solutions to $3\sin^{-1}(x)+\pi x-\pi=0$ is / are
  a) 1

b) 1
c) 2
d) ∞

Ans: a)

* Range of $\sin^{-1}(x)+x^2+4x+1$ is
  a) $\left[\frac{-\pi}{2}-2\,,\ \frac{-\pi}{2}+6\right]$
  b) $\left[0\,,\ \frac{\pi}{2}+6\right]$
  c) $\left[\frac{-\pi}{2}-2,\ \frac{\pi}{2}+6\right]$
  d) $[-3,\infty]$

  Ans: c)

* $(\tan^{-1}(x))^2 + (\cot^{-1}(x))^2 = \frac{5\pi^2}{8}$ then x =
  a) -1
  b) 1
  c) 0
  d) $\sqrt{3}$

  Ans: a)

* $\sin^{-1} \sin 3 + \cos^{-1} \cos 3$ is
  a) π
  b) π-3
  c) 6
  d) 0

  Ans: a)

* $\sec^2 \tan^{-1} 2 + \operatorname{cosec}^2 \cot^{-1}(3)$ =
  a) 14
  b) 15
  c) 12
  d) 13

Ans: b)

* Range of function $\sin^{-1}(x) + \tan^{-1}(x) + \sec^{-1}(x)$ is
  a) $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right)$
  b) $\left[\frac{\pi}{4}, \frac{3\pi}{4}\right]$
  c) $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right]$
  d) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}\right\}$

  Ans: d)

* Let f(x) be a polynomial function of second degree if f(1)=f(-1) and a,b,c are in A.P then $f^1(a)$, $f^1(b)$, $f^1(c)$ are in
  a) AP
  b) GP
  c) HP
  d) AGP

  Ans: a)

* If $f(x) = 2\tan^{-1} + \cos^{-1}\left[\frac{1-x^2}{1+x^2}\right]$ then . . . .
  a) $f^1(-2) = 0.8$
  b) $f^1(-1) = -1$
  c) $f^1(0) = 0, \forall\ x < 0$
  d) $f^1(0) = 0\ \forall\ x \in R^+$

  Ans: c)

* $f^1(x) = \sqrt{2x^2 - 1}$, $y = f(x^2)$ then y^1 at x = 1 is
  a) 2
  b) 1
  c) -2
  d) -1

  Ans: a)

* Y = $\frac{1+x^2+x^4}{1+x+x^2}$, y^1 = ax + b then . . . . a & b are . . .
    a) 2, 1
    b) -2 , 1
    c) 2, -1
    d) -2, -1

    Ans: c)

* y = $\frac{secx-tanx}{secx+tanx}$ then $\frac{dy}{dx}$ is
    a) 2secx[secx – tanx]
    b) -2sec[secx – tanx $]^2$
    c) 2secx[secx + tanx $]^2$
    d) -2secx[secx + tanx $]^2$

    Ans: b)

* If x defined by $x^{2x} – 2x^x$ coty-1 = 0 then $y^1(1)$ =
    a) log2
    b) –log (+2)
    c) 1
    d) -1

    Ans: d)