59. D < 0

$\Rightarrow px^2 + qx + r$ is always positive or always negative

But Given f (2) >0

$\Rightarrow$ f (0) and f(1) are also > 0

$\Rightarrow$ r > 0 & p + q + r > 0

60. $I_n = \int_{-\pi}^{0} \frac{\sin(nx)}{(1+\pi^x)\sin(x)}dx + \int_{0}^{\pi} \frac{\sin(nx)}{(1+\pi^x)\sin(x)}dx$

$= \int_{\pi}^{0} \frac{\sin(nx)}{(1+\pi^{-x})\sin(-x)}d(-x) + \int_{0}^{\pi} \frac{\sin(nx)}{(1+\pi^x)\sin(x)}dx$

$= \int_{0}^{\pi} \frac{\sin(nx)}{\sin x}\left\{\frac{1}{1+\pi^x} + \frac{1}{1+\pi^x}\right\}dx$

$I_n = \int_{0}^{\pi} \frac{\sin(nx)}{\sin(x)}dx$

$I_{n+2} - I_n = 0$

$\Rightarrow I_{n+2} = I_n$

$I_5 = I_3 = I_1$ etc

$I_4 = I_2 = I_1$ etc

$\sum_{m=1}^{10} I_{2m+1} = I_3 + I_5 + ---+ I_{21}$

$I_1 + I_1 ---10 times$

$10I_1 = 10\pi$

$\sum_{m=1}^{10} I_{2m} = I_0 + I_0 + ---10 times$

$= 10I_0 = 0$

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