

(viii) not applicable for EXAM 2

(b) (i)  $f(x) = \frac{x^3}{9} (3 \ln x - 1)$

not applicable for EQ  $\left\{ \begin{aligned} f'(x) &= \frac{x^3}{9} \left\{ \frac{3}{x} \right\} + (3 \ln x - 1) \left\{ \frac{3x^2}{9} \right\} \\ &= \frac{x^2}{3} + (3 \ln x - 1) \frac{x^2}{3} // \end{aligned} \right.$

(ii)  $g(\theta) = (a^2 - \sin^2 \theta)^{\frac{1}{2}}$   $\left\{ \begin{aligned} & \text{"a" is a} \\ & \text{constant} \end{aligned} \right\}$

$g'(\theta) = \frac{1}{2} (a^2 - \sin^2 \theta)^{-\frac{1}{2}} * \left\{ -2 \sin \theta (\cos \theta) \right\}$

(iii)  $f(t) = e^{-kt} \sin t$

$f'(t) = e^{-kt} \left\{ \cos t \right\} + (\sin t) \left\{ e^{-kt} * (-k) \right\}$   $\left\{ \begin{aligned} & k \text{ is a} \\ & \text{constant} \end{aligned} \right\}$

(iv)  $r(\theta) = e^{(e^\theta + e^{-\theta})}$

$r'(\theta) = e^{(e^\theta + e^{-\theta})} * \left\{ e^\theta + (e^{-\theta})(-1) \right\}$

(v)  $K(x) = e^{\tan(\sin x)}$

$K'(x) = e^{\tan(\sin x)} \left\{ [\sec^2(\sin x)] (\cos x) \right\}$