重點八 切線專論

設 $f(x)$ 在 $x=x_0$ 可微，

則 $y=f(x)$ 圖形在 $(x_0, f(x_0))$ 之切線方程式爲：

說明

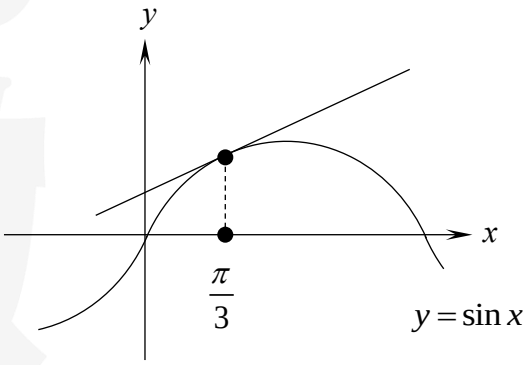
∵ 所求切線過 $(x_0, f(x_0))$ 且其斜率爲 _____

∴ 切線方程式爲 _____

例題 1.

Let $f(x)=\sin x$. Find the tangent line to $y=f(x)$ at $x=\frac{\pi}{3}$.

解



例題 2. (精選範例 8-1)

Let $f(x)=x^3+3x^2-4x-5$ and P is a point on the graph of $y=f(x)$. If the slope of the tangent line to the graph of $y=f(x)$ at P is 5, find P.

解

例題 3. (精選範例 8-2)

Suppose the tangent line to $f(x)=ax^3+bx^2+3$ at $x=-1$ is $y=3x+4$, find a and b.

解

例題 4. (精選範例 8-3)

Find all tangent lines to $f(x)=x^2+x+1$ passing through $(1,2)$.

解

例題 5. (精選範例 8-4)

Suppose that there exists two tangent lines to $f(x)=x^2-2x+2$ passing through P. If the slope of these two tangent lines are 6 and -2, find P.

解

例題 6. (精選範例 8-5)

If the tangent line to $f(x)=x^3+ax^2+bx-8$ at $(2,-10)$ has the smallest slope among all tangent lines, find a and b.

解

例題 7. (精選範例 8-6)

Find all intersections of $f(x)=x^3-4x+1$ and its tangent line at $(1,-2)$.

解