

## Syllabus Tentative Schedule

Chapter's Title	Topic/Activity	Examples	Exercises	Due to Week No.
Chapter P Preliminaries	<b>P.1</b> “ Real numbers and the real line ” Intervals-Inequalities-Absolute value.	<b>2(a,b), 3(a), 4(a), 6, 7</b> Add examples: Solve $x^2 - 5x + 6 > 0$ $ x - 6  \geq 5,  x + 4  > 6$	<b>14, 15, 18, 21, 28, 29, 35, 37</b> Solve $x^2 - 9 \geq 0$	<b>One</b>
	<b>P.2</b> “ Cartesian coordinates in the plane ” Axis scales-Distances-Graphs-Straight line-Equations of lines.	<b>2, 3, 6-11</b> Solve Exercise 31	<b>1, 3, 13, 15, 16, 21, 23, 25, 27, 28, 31, 32</b>	<b>Two</b>
	<b>P.3</b> “ Graphs of quadratic equations ” Explain the polynomial function which is found in part 6 page 39. Shifting a graph.	<b>8, 9</b>	<b>35-38</b>	
	<b>P.4</b> “ Functions and their graphs ” Definition of function-The domain convention-Graphs of functions-Even and odd functions.	<b>2-7</b> Solve Exercises 11, 12, 18	<b>1, 3, 4, 5, 11-14, 17, 18, 29, 30</b>	<b>Three</b>
	<b>P.5</b> “ Combining functions to make new functions ” Sums, differences, products, quotients, multiples-Composite functions-Piecewise defined functions.	<b>3-4, 6-10</b>	<b>1, 7, 9, 25</b>	
	<b>P.7</b> “ The trigonometric functions ” Definition 6-Definition 7-Some useful identities-Some special angles-The additional formulas-Other trigonometric functions.	<b>1-5, 7</b>	<b>1, 3, 5, 7, 9, 13, 16, 25, 29</b>	
	1– Convert from degrees to radians (a) $45^\circ$ (b) $120^\circ$ (c) $12^\circ$ (d) $270^\circ$ 2– Convert from radians to degrees (a) $\frac{2\pi}{3}$ (b) $\frac{\pi}{3}$ (c) $\frac{5\pi}{6}$ (d) $\frac{3\pi}{4}$ 3– If the radius of a circle is 9 cm, what angle is subtended by an arc of 12 cm? 4– If a circle has radius 4 cm, what is the length of an arc subtended by a central angle of $\frac{3\pi}{4}$ rad?			

<b>Chapter 1</b> <b>Limits and Continuity</b>	<b>1.2</b> “ Limits of functions ” Definition1-One-Sided limits-Rules for calculating limits-The Squeeze Theorem.	<b>1, 3, 4(a, c), 5-7, 9, 10</b>	<b>1, 7, 9, 11, 13, 14, 17, 18, 20, 22, 23, 30, 61, 63, 66, 74, 75</b>	<b>Five</b>
	<b>1.3</b> “ Limits at infinity and infinite limits ” Limits at infinity-Limits at infinity for rational functions-Infinite limits.	<b>1-5, 8, 9, 10</b>	<b>1, 3, 4, 5, 8, 9, 11, 13, 14, 23, 29, 35, 37, 43, 47, 49</b>	
	<b>1.4</b> “ Continuity ” Continuity at a point-Continuity on an interval-Continuous extensions and removable discontinuities.	<b>1-5, 6(a, b, c, d), 8</b>	<b>1, 7, 9, 13, 14, 17, 18</b>	
<b>Chapter 2</b> <b>Differentiation</b>	<b>2.1</b> “ The tangent lines and their slopes ” Defintion1-Definition2-Definition3-Normals	<b>1, 4, 6, 7</b>	<b>1, 3</b>	<b>Seven</b>
	<b>2.2</b> “ The derivative ” Definition4-Some important derivatives-Leibniz notation.	<b>1, 2(a), 3</b>	<b>11, 31, 35, 37, 41, 43</b>	
	<b>2.3</b> “ Differentiation rules ” Sum and constant multiples-The product rule-The reciprocal rule-The quotient rule.	<b>1, 3, 4, 7-9</b>	<b>1, 5, 7, 9, 10, 13, 15, 19, 21, 28, 42</b>	
	<b>2.4</b> “ The chain rule ” The chain rule-Building the chain into differentiation formulas.	<b>1, 2, 3(a), 5(a)</b>	<b>1, 4, 7, 8, 31, 36</b>	<b>Eight</b>
	<b>2.5</b> “Derivatives of trigonometric functions” Some special limits-The derivative of sine and cosine-The derivatives of the other trigonometric functions.	Find $\lim_{x \rightarrow 0} \frac{\sin 2x}{x}$ , <b>2, 3,</b> <b>5</b>	<b>3, 5, 7, 11, 13, 15, 17, 26, 29, 31, 35, 53</b>	
	<b>2.6</b> “ Higher-Order derivatives ”	<b>2, Find <math>y^{(3)}</math> if</b> $y = 3x^4 - x^3 + 2x - 15$  $y = x \sin x$	<b>1, 3, 9, 11</b>	
	<b>2.8</b> “ The Mean-Value Theorem ” Increasing and decreasing functions - Theorem 12	<b>4</b>	<b>8, 9, 11</b>	<b>Nine</b>
	<b>2.9</b> “ Implicit Differentiation ” Implicit Differentiation	<b>1, 3</b>	<b>1, 3, 5</b>	
<b>Chapter 3</b> <b>Transcendental Functions</b>	<b>3.1</b> “ Inverse functions ” Definition1 - Defintion2 - Properties of inverse functions	<b>1, 2</b>	<b>1, 3, 5, 6, 9</b>	<b>Ten</b>
	<b>3.2</b> “Exponential and logarithmic functions” Definition4 - laws of exponents – Definition5 - laws of logarithms	<b>3-4</b>	<b>1, 3, 5, 7, 9, 13, 15, 21, 23, 24</b>	
	<b>3.3</b> “The natural logarithm and exponential” Natural logarithm and its derivative - Natural exponential its derivative - The general logarithm and its derivative - The general exponential and its derivative	first part of <b>1, 2-3</b>	<b>1, 3, 5, 7, 11, 12, 19, 21, 23, 25, 31, 33, 37, 42, 44</b>	<b>Eleven</b>



	<b>3.5 “ The inverse trigonometric functions ”</b> Inverse trigonometric functions- Derivatives of inverse trigonometric functions.	<b>1-3</b> , first part of <b>4</b> , <b>6(a)</b> , <b>7</b> , first part of <b>8</b>	<b>1, 3, 5, 7, 9, 13,</b> <b>15, 19, 23, 25, 29</b>	
<b>Chapter 4</b> <b>More Applications of</b> <b>Differentiation</b>	<b>4.4 “ Extreme Values ”</b> Maximum and minimum values-Critical points-Local extreme values-The first derivative test.	<b>1 below</b>	<b>5(find abs. max and abs. min),</b> <b>18-20(find local max and local min)</b>	<b>Thirteen</b>
	<b>4.5 “ Concavity and inflections ”</b> Concave up and concave down-Inflection points	<b>2 below</b>	<b>2, 3, 4, 5</b>	
	<b>Example (1):</b> Find, critical points, the absolute maximum point and the absolute minimum point of the function $f(x)=3x^2-12x+1$ in $[0,3]$ . <b>Example (2):</b> If $f(x)=x^3-3x^2-9x+2$ , find the following: 1- The critical points 2- Local maximum values 7- Concave downward intervals 2- Increasing intervals 4- Local minimum values 8- Inflection points. 3- Decreasing intervals 5- Concave upward intervals			
	<b>General Revision</b>			