Markville Secondary School Mathematics Department

Homework Outline: 12 Calculus and Vectors
Updated June 2017

'Communicate Your Understanding' Questions are assigned for all topics

UNIT 1 - RATES OF CHANGE

Day	Topic	Text Section	Suggested HW
1	Rates of Change and the Slope of a Curve	1.1 & 1.2	Pg. 9 #1b, 2i,iv, 3 -9, 11 Pg. 20 #1abd, 2 – 4, 6-8, 10 ab, 11, 12ab, 13a, 15,
2	Limits	1.3	Pg. 29 #1- 14
3	Limits and Continuity	1.4	Pg. 44 # 1 – 10, 14
4-5	Limits of Indeterminate Form	1.4	Pg. 46 # 11 – 13, 15, 16- 18, 20
6	**Introduction to Derivatives**	1.5	Pg. 58 #1, 2a,bi and ii, 3, 4a, bi and ii, 5ace, 7, 8, 9 – 13, 14 ab, 16, 18 i, iii
7	Review		Pg. 64 #1 – 12 Pg. 67 #1 - 10
8	Test		

UNIT 2 - DERIVATIVES

Day	Topic	Text Section	Suggested HW
9	**Derivatives of Polynomial Functions**	2.1	Pg. 83 #1, 2, 3acef, 4, 5i, 6, 7, 9, 11, 13, 15, 16, 17, 20, 21, 24, 25, 27, 32
10	**The Product Rule**	2.2	Pg. 93 # 1ac, 2cdf, 4bc, 5df, 8be, 13, 15
11-12	**Velocity, Acceleration and Second Derivatives**	2.3	Pg.106 #1ace, 2ace, 4bd, 5 – 8, 9 – 13, 14
13	**Chain Rule**	2.4	Pg. 117 #1, 3ad,4ad,5ad, 6, 7ad, 8bd, 10- 12
14	**Quotient Rule**	2.5	Pg. 125 #5bd, 6bd, 8 – 10, 12
15	**Putting it All Together**		
16-17	**Rate of Change Problems**	2.6	Pg. 137 # 1 – 3, 5, 8, 11 Pg. 138 # 4, 6, 7, 10
18	Review		Pg. 142 # 1 – 9, 10abd
19	Test		

UNIT 3 - CURVE SKETCHING

Day	Topic	Text Section	Suggested HW
20	**Increasing and Decreasing Functions**	**3.1**	Pg. 156 #1adf,2, 3i – v, 4adeg, 5 – 8, 10, 11
21	**Maxima and Minima**	**3.2**	Pg. 163 #1,2ad, 2ace,4a,cd,5,7 – 12, 16
22	**Concavity and Second Derivative Test**	**3.3**	Pg. 174 # 1,2, 6 – 8, 9, 11, 12, 13
23	**Simple Rational Functions**	**3.4**	Pg. 183 #3 – 7, 9
24-25	**Putting It All Together**	**3.5**	Pg. 192 # 3 – 8, 9ac, 10, 12, 13, 14
26-28	**Optimization Problems**	**3.6**	Pg. 201 # 1 – 3, 15, 16 Pg. 201 #4 – 11 Pg. 201 #12 – 14, 17 - 20
29	**Review**		Pg. 204 # 1 - 16
30	**Test**		Pg. 206 # 1 - 18

UNIT 4 - DERIVATIVES OF SINUSOIDAL FUNCTIONS (This Unit May Be Combined with Unit 5**)**

Day	Topic	Text Section	Suggested HW
31	**Instantaneous Rate of Change of Sinusoidal Functions**	**4.1**	Pg. 217 #1 - 3
32	**Derivatives of the Sine and Cosine Functions**	**4.2**	Pg. 225 # 1- 3, 5 – 10, 13
33	**Differentiation Rules for Sinusoidal Functions**	**4.3**	Pg. 231 #1bd,2bd,3, 4, 5acef, 6 – 11, 13, 15
34	**Applications of Sinusoidal Functions and their Derivatives**	**4.4**	Pg. 241 #1 – 5, 7, 9, 12
35	**Review**		Pg. 244 1 – 11, Pg. 246 # 1 – 17
36	**Test**		

UNIT 5 - DERIVATIVES EXPONENTIAL AND LOGARITHMIC FUNCTIONS (**This Unit May Be Combined with Unit 4**)

37	Rate of Change and the Number e	5.1	Pg. 256 #1 - 9
38	The Natural Logarithm	5.2	Pg. 265 # 1 – 10, 13, 14
39	Derivatives of Exponential Functions	5.3	Pg. 274 #1, 3, 5 – 8, 12, 14, 16
40-41	Differentiation Rules for Exponential Functions	5.4	Pg. 282 #2bdfg,3ac, 4, 5, 7 - 14
42	Making Connections: Exponential Models	5.5	Pg. 289 #1, 2 5, 8, 10, 13
43	Review		Pg. 294 #1 – 16, Pg. 296 # 1 - 16
44	Test		

UNIT 6 -   GEOMETRIC VECTORS

Day	Topic	Text Section	Suggested HW
45	Pre-requisite skills Review		Pg. 302-303 #3 - 10
46	Introduction to Vectors	6.1	Pg. 310 #1- 4, 5ace, 6ace, 7,8, 9ace,10ac,11aceg,13, 16
47	Addition and Subtraction of Vectors	6.2	Pg. 325 #1bc, 3bd, 4adefh, 5, 6b, 9, 11 – 14
48	Multiplication of a Vector by a Scalar	6.3	Pg. 334 #1bd, 2ce, 4ace, 5c, 6b, 7bd, 8, 9, 11aceh, 13, 17, 18, 19
49-50	Velocity as Vectors	6.4	Pg. 343 #1ace, 2, 3ab, 5, 5, 8, 9, 20, 21
51	Tension & Forces as Vectors	6.4	Tension: Pg. 343 #4, 12 Forces: Pg. 343 #10,11, 15, 16, 17
52	Resolution of Rectangular Components	6.5	**Verify with teacher whether this topic is assigned/covered P. 349 #2, 4, 6, 9, 11, 12, 13
53	PTask: Tension Hang Up	Handout	
54	Review		Chapter Review & Practice test Pg. 352 - 355
55	Unit Test		

UNIT 7 -   ALGEBRAIC VECTORS

Day	Topic	Text Section	Suggested HW
56	**Cartesian Vectors**	**7.1**	Pg. 367 #1 – 8, 9ace,11, 12, 14 – 16, 23
57-58	**Dot Product**	**7.2**	Pg. 375 # 1, 2a-d, 3, 4ae, 5, 7cdehi, 8 – 11, 13, 15, 17a, 19
59	**Applications of the Dot Product**	**7.3**	Pg. 384 #1a, 2b, 3bd, 4bc, 5cd, 6, 7, 9, 11, 12, 17, 18 - 21
60	**Vectors in 3D**	**7.4**	Pg. 399 #1, 3, 5a, 6b, 7, 8, 9a, 10ab, 11 – 13, 15efi, 16, 17, 18, 23, 29a
61	**Cross Product and Properties**	**7.5**	Pg. 410 # 1, 2ab, 3a, 4, 5, 6, 7cde, 8, 9, 10, 12, 14, 15, 18
62	**Applications of Dot and Cross Products**	**7.6**	Pg. 418 # 1, 2ac, 3b, 5a, 6, 7, 8, 10, 11, 12
63	**Review**		Pg. 420 # 1 – 19, Pg 422 # 1 - 28
64	**Test**		

UNIT 8 - LINES AND PLANES

Day	Topic	Text Section	Suggested HW
65	**Equations of Lines in 2D**	**8.1**	Pg. 437 # 1a, 2b, 5ab, 6bc, 7ab, 8cd, 9c, 10bc, 11c, 14, 16b, 21
66	**Equations of Lines in 3D**	**8.1**	Pg. 437 #1c, 2d, 6c, 7cd, 12, 13, 16ce, 17, 18a, 20a, 22, 26
67	**Equations of Planes** **-Vector and Parametric**	**8.2**	Pg. 451# 1ab, 2ab, 3ac, 4ac, 5a, 6a, 7a, 8, 9a, 10, 12, 13,
68	**Properties of Planes** **-Scalar**	**8.3**	Pg. 459 # 2bc, 4bd, 5, 6bd, 7bd, 8 – 1012 be, 16, 17 - 19
69	**Intersections of Lines in 2D and 3D**	**8.4**	Pg. 471 # 1, 2c, 3ef, 4cd, 5cd, 6ef, 8, 9cd, 14,
70	**Intersection of Lines and Planes**	**8.5**	Pg. 479 # 2ad, 3df, 4bc, 5def, 6def, 7def, 8def, 9, 10, , 13, 14, 15, 16
71	**Intersection of Planes (Investigation)**	**Geogebra**	
72-73	**Intersection of Planes**	**8.5**	Pg. 491 # 1cd, 2cd, 3a, 4cd, 5cd, 6cd, 7cd, 11 - 15
74	**Review**		Pg. 502 # 1 – 23 Pg 505 # 1 - 22
75	**Test**		