

### MT1003 - Practice Questions

This list contains all possible questions from the textbook that students should be able to solve after the relevant topic is covered in class. However, students should not restrict themselves to only these questions, as assessment items may contain questions from outside the textbook.

**Textbook:** Thomas' Calculus Early Transcendentals (13th Edition) by George B. Thomas, Jr, Maurice D. Weir, Joel Hass

Exercise	Questions
1.1	1-28, 37-64, 69-72
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2.1	1-16
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4.4	1-102, 107-122
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4.6	1-42, 45, 46, 51-60
4.8	1-82, 89-114, 119-128
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5.5	1-80
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8.1	1-41, 43, 44, 48-50
8.2	1-54, 61, 62
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8.4	1-58
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8.8	1-34, 65, 66, 67, 71
10.1	1-98, 101, 102, 107-126
10.2	1-18, 27-68, 73-78

Sr. No.	Topic	Link
1	Functions	<a href="https://youtu.be/HqMaRdzywPs?si=Fj5RBwmQXT2j5OLS">https://youtu.be/HqMaRdzywPs?si=Fj5RBwmQXT2j5OLS</a>
2	Domain Range	<a href="https://youtu.be/djT6-YamHaA?si=6Qy-Bx-WRMPKp3RN">https://youtu.be/djT6-YamHaA?si=6Qy-Bx-WRMPKp3RN</a>
3	Even Odd Functions	<a href="https://youtu.be/fKyBOLsqRlo?si=YhIT2o0QjNFidVi">https://youtu.be/fKyBOLsqRlo?si=YhIT2o0QjNFidVi</a>
4	Graphs of Basic Functions	<a href="https://youtu.be/r9451fiX7zA?si=UhDflbcor1QBcdt2">https://youtu.be/r9451fiX7zA?si=UhDflbcor1QBcdt2</a>
5	Transforming Algebraic Functions	<a href="https://youtu.be/MkP1LJR2PyM?si=uqQjQQo99jTUnUWc">https://youtu.be/MkP1LJR2PyM?si=uqQjQQo99jTUnUWc</a>
6	Graphing Sine and Cosine Trig Functions	<a href="https://youtu.be/Vw-RwPBWS8g?si=VaivaA-y_a_To4rs">https://youtu.be/Vw-RwPBWS8g?si=VaivaA-y_a_To4rs</a>
7	Graphing Logarithmic Functions	<a href="https://youtu.be/2Vvs9hU3pBI?si=5ztrLv_jdTnuYzJX">https://youtu.be/2Vvs9hU3pBI?si=5ztrLv_jdTnuYzJX</a>
8	Graphing Exponential Functions	<a href="https://youtu.be/3G5WluJ7LFA?si=EKKRQaPQNpgYODfU">https://youtu.be/3G5WluJ7LFA?si=EKKRQaPQNpgYODfU</a>
9	Introduction to Inverse Trigonometric Functions	<a href="https://youtu.be/ih01YszlraY?si=7QHWc2ISjJdK8Az3">https://youtu.be/ih01YszlraY?si=7QHWc2ISjJdK8Az3</a>
10	Shifting, Stretching and Reflecting Parent Function Graphs	<a href="https://youtu.be/LvByEdtMm3o?si=1q6eWM4mJ6bcvzd2">https://youtu.be/LvByEdtMm3o?si=1q6eWM4mJ6bcvzd2</a>
11	Piecewise Functions	<a href="https://youtu.be/JrYmEo6hoiU?si=IJ7vJTtVWcYILY5p">https://youtu.be/JrYmEo6hoiU?si=IJ7vJTtVWcYILY5p</a>
12	Limits of Trigonometric Functions	<a href="https://youtu.be/HbtuSC_WOW0?si=sIEGv9aulnzYmNSP">https://youtu.be/HbtuSC_WOW0?si=sIEGv9aulnzYmNSP</a>
13	Introduction to Limits	<a href="https://youtu.be/YNstP0ESndU?si=lbeDbfSK2WN1ZTQI">https://youtu.be/YNstP0ESndU?si=lbeDbfSK2WN1ZTQI</a>
14	Continuity	<a href="https://youtu.be/WT7oxiiFYt8?si=nl4oWSSFs3jWPWzA">https://youtu.be/WT7oxiiFYt8?si=nl4oWSSFs3jWPWzA</a>
15	Discontinuity	<a href="https://youtu.be/joewR1CTL8?si=-X_t02PRB87JUUYW">https://youtu.be/joewR1CTL8?si=-X_t02PRB87JUUYW</a>
16	Removable and Nonremovable Discontinuity	<a href="https://youtu.be/ZB4Cp-F6c5M?si=X-u672uvLwySurOI">https://youtu.be/ZB4Cp-F6c5M?si=X-u672uvLwySurOI</a>
17	Continuous Extension to a Point	<a href="https://youtu.be/oUgDaEwMbiU?si=pZaKgYLIEKl9ZmY">https://youtu.be/oUgDaEwMbiU?si=pZaKgYLIEKl9ZmY</a>
18	Limits at Infinity	<a href="https://youtu.be/NmLljBAg82o?si=hWwoij9eqK2O6KOy">https://youtu.be/NmLljBAg82o?si=hWwoij9eqK2O6KOy</a>
19	Asymptotes	<a href="https://youtu.be/qGCKjuhA4eQ?si=R6K0qrrVEmu2x16H">https://youtu.be/qGCKjuhA4eQ?si=R6K0qrrVEmu2x16H</a>
20	Continuity and Differentiability at a Point	<a href="https://youtu.be/s2MrsKTYt4I?si=fl5nnpy0LqEX4HBy">https://youtu.be/s2MrsKTYt4I?si=fl5nnpy0LqEX4HBy</a>
21	Continuity and Differentiability at a Point	<a href="https://youtu.be/GG76ZEmRAol?si=XDj-LFxF_Crn2QtR">https://youtu.be/GG76ZEmRAol?si=XDj-LFxF_Crn2QtR</a>
22	Corners, Cusps and Vertical Tangents	<a href="https://youtu.be/IG35ZrCRt1I?si=Z8GxtNeof-dbjEoT">https://youtu.be/IG35ZrCRt1I?si=Z8GxtNeof-dbjEoT</a>
23	Graphing Functions Rational functions with Holes and Asymp	<a href="https://youtu.be/GxyneElvjRA?si=R8LuB7Mcbj-YJz5y">https://youtu.be/GxyneElvjRA?si=R8LuB7Mcbj-YJz5y</a>
24	Derivative Rules	<a href="https://youtu.be/aL15O6rS9z0?si=QgXt46UdcFVQbwcH">https://youtu.be/aL15O6rS9z0?si=QgXt46UdcFVQbwcH</a>
25	Derivative as Rate of Change	<a href="https://youtu.be/uePqXn7FXvY?si=4Hk3jUJa7LxNLt0M">https://youtu.be/uePqXn7FXvY?si=4Hk3jUJa7LxNLt0M</a>
26	Velocity, Speed, Acceleration	<a href="https://youtu.be/pFeuGMMiZWw?si=Sj1m5pHXuEHTWrTf">https://youtu.be/pFeuGMMiZWw?si=Sj1m5pHXuEHTWrTf</a>
27	Working with Position, Velocity, and Acceleration	<a href="https://youtu.be/R1H0i5Dx8IE?si=NSn0w5HbSUJOj0Jk">https://youtu.be/R1H0i5Dx8IE?si=NSn0w5HbSUJOj0Jk</a>
28	Reading Velocity from Graph	<a href="https://youtu.be/lKxShbrUHQ?si=q3sy89qM2CsJzuoa">https://youtu.be/lKxShbrUHQ?si=q3sy89qM2CsJzuoa</a>
29	Detailed Lecture on Derivative as Rate of Change	<a href="https://youtu.be/ezPaoc8uYVI?si=lltYzCmaLxmVh30">https://youtu.be/ezPaoc8uYVI?si=lltYzCmaLxmVh30</a>
30	Marginal Cost	<a href="https://youtu.be/Wkjz1LIX1CQ?si=lewFil-9rhIMYkLB">https://youtu.be/Wkjz1LIX1CQ?si=lewFil-9rhIMYkLB</a>
31	Derivatives of Trigonometric Functions	<a href="https://youtu.be/PEqCa0U77mc?si=OTKqUG6MniLGBtVA">https://youtu.be/PEqCa0U77mc?si=OTKqUG6MniLGBtVA</a>
32	The Chain Rule	<a href="https://youtu.be/H-ybCx8gt-8?si=x94p3oC42Bu20mdM">https://youtu.be/H-ybCx8gt-8?si=x94p3oC42Bu20mdM</a>
33	Derivative of Composite Functions	<a href="https://youtu.be/_x1nCG2Lfua?si=RpljsUaGQSN0GKsE">https://youtu.be/_x1nCG2Lfua?si=RpljsUaGQSN0GKsE</a>
34	Implicit Differentiation	<a href="https://youtu.be/LGY-DjFsAlc?si=3Q5ZYDnOyRtS36UA">https://youtu.be/LGY-DjFsAlc?si=3Q5ZYDnOyRtS36UA</a>
35	Implicit Differentiation	<a href="https://youtu.be/fly5Wav4rok?si=MkJex2Xkta2F8aPp">https://youtu.be/fly5Wav4rok?si=MkJex2Xkta2F8aPp</a>
36	Derivatives of Logarithmic and Exponential Functions	<a href="https://youtu.be/zjKMkbcbtHY?si=5CwH6yHdTaQHSilV">https://youtu.be/zjKMkbcbtHY?si=5CwH6yHdTaQHSilV</a>
37	Logarithmic Differentiation	<a href="https://youtu.be/Q27MGfl1V70?si=Es6-5HzJmJs3n-eP">https://youtu.be/Q27MGfl1V70?si=Es6-5HzJmJs3n-eP</a>
38	Inverse Trigonometric Functions	<a href="https://youtu.be/YXWKpgmLgHk?si=Jvv9E8Zlb4ouiJnV">https://youtu.be/YXWKpgmLgHk?si=Jvv9E8Zlb4ouiJnV</a>
39	Derivatives of Inverse Trigonometric Functions	<a href="https://youtu.be/m3nezl-ol6Y?si=gie3nxSHsVu6BEHg">https://youtu.be/m3nezl-ol6Y?si=gie3nxSHsVu6BEHg</a>
40	Derivatives of Inverse Functions	<a href="https://youtu.be/Hw6ltuCEtuU?si=pi7PfhSHJtj85mH">https://youtu.be/Hw6ltuCEtuU?si=pi7PfhSHJtj85mH</a>
41	Related Rates P1	<a href="https://youtu.be/j6l3EXiKB2A?si=bqDKApAn-7pua_K8">https://youtu.be/j6l3EXiKB2A?si=bqDKApAn-7pua_K8</a>
42	Related Rates P2	<a href="https://youtu.be/l9mVUo-bhM8?si=qzVXsHPZ241_m0BT">https://youtu.be/l9mVUo-bhM8?si=qzVXsHPZ241_m0BT</a>
43	Detailed Lecture on Related Rates with Examples	<a href="https://youtu.be/ps-r4nti5Go?si=aqJBDCFTYzJ-TKvU">https://youtu.be/ps-r4nti5Go?si=aqJBDCFTYzJ-TKvU</a>
44	Linear Approximation	<a href="https://youtu.be/VVtGpDPn1CU?si=3PISn80oLzOGSKp">https://youtu.be/VVtGpDPn1CU?si=3PISn80oLzOGSKp</a>
45	Linear Approximation	<a href="https://youtu.be/oxwCRzQOCu8?si=Wois5BlqF2PxzD7C">https://youtu.be/oxwCRzQOCu8?si=Wois5BlqF2PxzD7C</a>
46	Differentials	<a href="https://youtu.be/6u-ldWJKN7A?si=ULoB1t6Xrugc9nuA">https://youtu.be/6u-ldWJKN7A?si=ULoB1t6Xrugc9nuA</a>

47	Propagated Error	<a href="https://youtu.be/6u-ldWJKN7A?si=p22wDYSmKF4YXdc8">https://youtu.be/6u-ldWJKN7A?si=p22wDYSmKF4YXdc8</a>
48	Finding Absolute Maximum and Minimum Values	<a href="https://youtu.be/3wrXDw5ET4?si=0xktGZuO93c30soO">https://youtu.be/3wrXDw5ET4?si=0xktGZuO93c30soO</a>
49	Increasing, Decreasing Functions	<a href="https://youtu.be/DyI7jPIJXOM?si=rtXJKkijXvWAKzZo">https://youtu.be/DyI7jPIJXOM?si=rtXJKkijXvWAKzZo</a>
50	1st Derivative Test	<a href="https://youtu.be/G5wIKltW7pM?si=yL7w0WYKL4h4mOTx">https://youtu.be/G5wIKltW7pM?si=yL7w0WYKL4h4mOTx</a>
51	Concavity, Point of Inflection and 2nd Derivative Test	<a href="https://youtu.be/OhqNbQi9QPk?si=JDYNAY60WIIPjWP">https://youtu.be/OhqNbQi9QPk?si=JDYNAY60WIIPjWP</a>
52	Curve Sketching	<a href="https://youtu.be/JTVNUdL7sWs?si=TEgga8hJNK1gq7ja">https://youtu.be/JTVNUdL7sWs?si=TEgga8hJNK1gq7ja</a>
53	Curve Sketching P1	<a href="https://youtu.be/vOTTuZfIAIM?si=dakuurDRSYXVZ2Af">https://youtu.be/vOTTuZfIAIM?si=dakuurDRSYXVZ2Af</a>
54	Curve Sketching P2	<a href="https://youtu.be/0Fx6jec8SwY?si=v5L4_XwQStjRzb2G">https://youtu.be/0Fx6jec8SwY?si=v5L4_XwQStjRzb2G</a>
55	L'hospital's Rule	<a href="https://youtu.be/Gh48aQvWcxw?si=IQujlxZCcKflZR_Y">https://youtu.be/Gh48aQvWcxw?si=IQujlxZCcKflZR_Y</a>
56	L'hospital's Rule	<a href="https://youtu.be/g45quDrSA6g?si=OxdplGz2KUGUhYZR">https://youtu.be/g45quDrSA6g?si=OxdplGz2KUGUhYZR</a>
57	Optimization	<a href="https://youtu.be/q1U6Amla_uQ?si=K7Qbi9OTGtj5WLbl">https://youtu.be/q1U6Amla_uQ?si=K7Qbi9OTGtj5WLbl</a>
58	Optimization	<a href="https://youtu.be/Fv7pHfYM2bs?si=RHs5P01nVPX1O-oD">https://youtu.be/Fv7pHfYM2bs?si=RHs5P01nVPX1O-oD</a>
59	Optimization	<a href="https://youtu.be/mamH094uw_U?si=hqHZoG7ylaM57hob">https://youtu.be/mamH094uw_U?si=hqHZoG7ylaM57hob</a>
60	Optimization	<a href="https://youtu.be/lRWuAoqeeGM?si=pz4o3jNN-GQ5UUJ6">https://youtu.be/lRWuAoqeeGM?si=pz4o3jNN-GQ5UUJ6</a>
61	Fundamental Theorem of Calculus	<a href="https://youtu.be/aeB5BWY0RIE?si=30HvktsvadlnLnG">https://youtu.be/aeB5BWY0RIE?si=30HvktsvadlnLnG</a>
62	Definite Integrals and Negative Area	<a href="https://youtu.be/MM0FTzvedH4?si=DZaWbWIEHc7ogIYu">https://youtu.be/MM0FTzvedH4?si=DZaWbWIEHc7ogIYu</a>
63	Area Bounded Above by Curve and Below by x-axis	<a href="https://youtu.be/umiUmq5e05o?si=2QmUQRh8vlnJtpz0">https://youtu.be/umiUmq5e05o?si=2QmUQRh8vlnJtpz0</a>
64	Integration Using Substitution Rule	<a href="https://youtu.be/sci1pls4Lc8?si=ornKc2wn0ilPvgr1">https://youtu.be/sci1pls4Lc8?si=ornKc2wn0ilPvgr1</a>
65	Area Between Curves	<a href="https://youtu.be/xec6HTcn2M8?si=PdDB0FicmFewqMcQ">https://youtu.be/xec6HTcn2M8?si=PdDB0FicmFewqMcQ</a>
66	Area Between Curves	<a href="https://youtu.be/B5441_DREY0?si=5OK3mmoS77FwLa0i">https://youtu.be/B5441_DREY0?si=5OK3mmoS77FwLa0i</a>
67	Integration by Parts	<a href="https://youtu.be/zNU8iK8sGD0?si=KOBLiSLPVAfApQK4">https://youtu.be/zNU8iK8sGD0?si=KOBLiSLPVAfApQK4</a>
68	Tabular Integration	<a href="https://youtu.be/Yyic5aaXGaw?si=BLIysaYfABEYheZu">https://youtu.be/Yyic5aaXGaw?si=BLIysaYfABEYheZu</a>
69	Trigonometric Integrals	<a href="https://youtu.be/zyg9k1je7Fg?si=0xkscNrDJ5HCyIB-">https://youtu.be/zyg9k1je7Fg?si=0xkscNrDJ5HCyIB-</a>
70	Trigonometric Integrals	<a href="https://youtu.be/hu4D7gk8jFU?si=AXG3ZxhcU0VK5Fqz">https://youtu.be/hu4D7gk8jFU?si=AXG3ZxhcU0VK5Fqz</a>
71	Trigonometric Substitution	<a href="https://youtu.be/t3rxSgvZZk?si=o-mnc4aT9hxKhZEk">https://youtu.be/t3rxSgvZZk?si=o-mnc4aT9hxKhZEk</a>
72	Geometric Series and Geometric Sequences	<a href="https://youtu.be/zRKZ0-kOUZM?si=1Agp1KZETu7q-pX-">https://youtu.be/zRKZ0-kOUZM?si=1Agp1KZETu7q-pX-</a>
73	Telescoping Series	<a href="https://youtu.be/XVkdU6nJbo?si=J_noSDKpniMe3ftk">https://youtu.be/XVkdU6nJbo?si=J_noSDKpniMe3ftk</a>
74	Nth term Test for Divergence	<a href="https://youtu.be/nC_IU1IzzS4?si=B-tVtefZUOYkqI0G">https://youtu.be/nC_IU1IzzS4?si=B-tVtefZUOYkqI0G</a>