A3SR Math Review Resources/Links

Properties of Logarithms

https://mcckc.edu/tutoring/docs/bt/exp_rad_log/Logarithms_and_Their_Properties.pdf
Basics: https://www.youtube.com/watch?v=9c6-aQGfY_E
Natural Log: https://www.youtube.com/watch?v=fZdWSlXkKzY

Matrix Algebra

https://www.math.hmc.edu/calculus/tutorials/matrixalgebra/
https://www.stat.washington.edu/adobra/classes/536/Files/week1/matrixfull.pdf
https://www.youtube.com/playlist?list=PLZHQObOWTQDPD3MizzM2xVFitgF8hE_ab

Derivatives

http://tutorial.math.lamar.edu/pdf/Calculus_Cheat_Sheet_Derivatives.pdf
http://tutorial.math.lamar.edu/Classes/CalcI/DerivativeIntro.aspx
Chain Rule: https://www.youtube.com/watch?v=gt22FmU3bv4&list=PLDE077A2EC488104D&index=16
Quotient Rule: https://www.youtube.com/watch?v=K3MxofAF-9o&list=PLDE077A2EC488104D&index=22

Integrals

http://tutorial.math.lamar.edu/Classes/CalcI/IntegralsIntro.aspx
https://www.cliffsnotes.com/study-guides/calculus/calculus/integration/definite-integrals
https://www.cliffsnotes.com/study-guides/calculus/calculus/integration/antiderivatives-indefinite-integrals
U-Substitution: https://www.youtube.com/watch?v=nLKcIKbNK3Q
More U-Substitution: https://www.youtube.com/watch?v=QNMErMqnnqY
Integration by Parts: https://www.youtube.com/watch?v=dqaDSlYdRcs

Variables: Types and Summaries

Download OpenIntro Statistics (4th edition): https://leanpub.com/openintro-statistics
Note: you can download the PDF for free or choose to pay any amount
OpenIntro statistics: Chapter 1.1-1.2 (pgs 8-21), Chapter 2.1-2.2 (pgs 39-78)

#Basic Probability
OpenIntro statistics: Chapter 3.1-3.2 (pgs 80-111)

Random Variables and Probability Density/Mass Functions

Random Variables, Expectation/Variance: OpenIntro statistics: Chapter 3.4-3.5 (pgs 115-130)
Probability Distributions: OpenIntro statistics: Chapter 4-3.5 (pgs 132-167) (this covers the normal, geometric,

binomial, negative binomial, and poisson distributions. Normal is the most important to review; the others will be covered in Probability, but it can't hurt to review them beforehand if you have time)
https://www.youtube.com/watch?v=oHcrna8Fk18&list=PLvxOuBpazmsNIHP5cz37oOPZx0JKyNszN
Expected Value: https://www.youtube.com/watch?v=Vyk8HQOckIE

Central Limit Theorem Introduction

OpenIntro statistics: Chapter 5.1-5.2 (pgs 170-188)

Z-Tests, T-Tests, and P-Values

Hypothesis Testing: OpenIntro statistics: Chapter 5.3 (pgs 189-205) (in the 4th edition, hypothesis testing is introduced in the context of proportions; for examples of hypothesis testing with the sample mean, see http://www.ltcconline.net/greenl/courses/201/hyptest/hypmean.htm)
T-Tests: OpenIntro statistics: Chapter 7.1-7.3 (pgs 250-277)
P-value: https://www.youtube.com/watch?v=UsU-O2Z1rAs

T-Distribution (more technical): https://www.youtube.com/watch?v=T0xRanwAIiI
T-Distribution (less technical): https://www.youtube.com/watch?v=Uv6nGIgZMVw
T-Tests: https://www.youtube.com/watch?v=T9nI6vhTU1Y

Correlation and Covariance

https://web.stanford.edu/class/archive/cs/cs109/cs109.1178/lectureHandouts/150-covariance.pdf
OpenIntro statistics: Section 8.1.4 (pgs 310-312)
https://www.youtube.com/watch?v=KDw3hC2YNFc

Ordinary Least Squares Regression

OpenIntro statistics: Chapter 8.1-8.2 (pgs 305-327)
https://www.youtube.com/watch?v=coQAAN4eY5s