MATH 1332 Test 3: Formula Sheet

$$95\%\ confidence\ interval = from\ (sample\ statistic - margin\ of\ error)\ to\ (sample\ statistic + margin\ of\ error)$$

$$relative\ frequency = \frac{frequency\ in\ category}{total\ frequency}$$

$$cumulative\ frequency = \frac{frequency\ in\ category\ and\ all\ preceding\ categories}{total\ frequency}$$

$$mean = \frac{sum\ of\ all\ values}{total\ number\ of\ values}$$

$$range = highest\ value - lowest\ value$$

$$standard\ deviation = \sqrt{\frac{sum\ of\ (deviations\ from\ the\ mean)^2}{total\ number\ of\ data\ values - 1}}$$

$$standard\ deviation \approx \frac{range}{4}$$

$$lowest\ value \approx mean - (2 \times standard\ deviation)$$

$$highest\ value \approx mean + (2 \times standard\ deviation)$$

$$growth\ rate = birth\ rate - death\ rate$$

$$logistic\ growth\ rate = r \times \left(1 - \frac{population}{carrying\ capacity}\right)$$

$$rate\ of\ change = slope = \frac{change\ in\ dependent\ variable}{change\ in\ independent\ variable}$$

$$slope = \frac{change\ in\ y}{change\ in\ x}$$

$$change\ in\ dependent\ variable = \begin{pmatrix}\text{rate of}\\ \text{change}\end{pmatrix} \times \begin{pmatrix}\text{change in}\\ \text{independent variable}\end{pmatrix}$$

$$dependent\ variable = initial\ value + (rate\ of\ change \times independent\ variable)$$

$$Q = Q_0 \times (1 + r)^t$$

$$T_{double} = \frac{\log_{10} 2}{\log_{10}(1 + r)} \qquad (r > 0)$$

$$T_{double} \approx \frac{70}{P}$$

$$new\ value = initial\ value \times 2^{t/T_{double}}$$

$$T_{half} = -\frac{\log_{10} 2}{\log_{10}(1 + r)} \qquad (r < 0)$$

$$T_{half} \approx \frac{70}{P}$$

$$new\ value = initial\ value \times \left(\frac{1}{2}\right)^{t/T_{half}}$$