

PreCalculus --- Final Exam --- 2017 --- Formula and Notes Sheet

<p>Limits</p> <p>$\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$</p> <ul style="list-style-type: none"> → smaller degree = 0 larger degree → larger degree = $\pm\infty$ smaller degree → same degree = $\frac{\text{leading coefficient}}{\text{leading coefficient}}$ same degree <p>$\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$ - Always plug in FIRST</p> <ul style="list-style-type: none"> → $\frac{0}{0}$ → Hole! Eliminate the hole the re-plug in to get a # (y-coordinate of the hole) and you're done! → $\frac{\#}{0}$ → V.A. → test left and right sides: answer is $+\infty, -\infty$, or DNE. 	<p>Functional Analysis</p> <p>HA @ $y = 0$</p> <p>SA (long division)</p> <p>HA @ $\frac{\text{Leading coefficient}}{\text{Leading coefficient}}$</p> <p>Hole @ when factor of num = factor of denom</p> <p>VA @ any # that makes denom = 0</p>
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$\log_a b = c$ implies $a^c = b$

$\log a = \log_{10} a$

$\ln b = \log_e b$

$\log_c d = \frac{\log_x d}{\log_x c} = \frac{\log d}{\log c} = \frac{\ln d}{\ln c}$

$\log_x f + \log_x g = \log_x (fg)$

$\log_y h - \log_y j = \log_y \left(\frac{h}{j} \right)$

$\log_k m^n = n \log_k m$

Compound Interest: $A(t) = P \left(1 + \frac{r}{n} \right)^{nt}$

Continuous Interest: $A(t) = Pe^{rt}$

Newton's Law of Cooling:

$u(t) - T_s = (u_0 - T_s)e^{kt}$

Given the Matrix: $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$

The Determinant is: $|A| = ad - bc$

The Inverse is: $A^{-1} = \frac{1}{|A|} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

Given 3 points of a triangle, the area can be given by: $A = \pm \frac{1}{2} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix}$