Exam 3 Review **November 2026**
Precalculus **Prof. Nollet**

Look over all of your homework, quizzes, and notes to try to overcome problems you might have had there. Practice similar problems with book closed. Exam covers 4.1-2, 5.1-4, 6.1-2.

4.1 Given a rational function $f(x) = \dfrac{N(x)}{D(x)}$, know how to find the horizontal asymptote, the vertical asymptote(s), and the holes in the graph.

4.2 For $y = f(x)$ as above, find the x-intercepts (where $N(x) = 0$) and use a sign table to make a sketch of the graph of $y = f(x)$.

5.1 Graph the exponential function $y = f(x) = a^x$ for $0 < a \neq 1$. Note that the graphs look different for $a > 1$ versus $0 < a < 1$.

5.2 Define $\log_a x = y$ by $x = a^y$. Be able to use this definition to compute simple values. $y = g(x) = \log_a x$ is the inverse function to $f(x) = a^x$, which gives the graph.

5.3 Change of base formula $\log_a b = \dfrac{\ln b}{\ln a}$, three properties of logarithms:

$$\log_a uv = \log_a u + \log_a v, \log_a \frac{u}{v} = \log_a u - \log_a v, \log_a u^n = n \log_a u.$$

5.4 Solve equation involving a^x and $\log_a x$.

6.1 Angles in standard position, degrees, radian measure, the conversion between degrees and radians: factor is $\frac{\pi}{180}$. Formulas for distance around a circle and area of a sector of a circle using radians.

6.2 Right triangle trigonometry: for an acute angle θ, know the six trig function $\sin\theta, \cos\theta, \tan\theta, \csc\theta, \sec\theta, \cot\theta$. Given two sides of a right triangle or one side and one angle, be able to find the missing sides and all six trig functions of the angle.

Suggestion. We had a few lower scoring quizzes the past few weeks, so it would be good to look at some book problems or examples from sections 4.2 and 5.1-5.3.