

Exam 2 Review
Precalculus

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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 Chapter 2 and 3.1-2.

- 2.1 Know $y = mx + b$ form of a linear function and how to graph it. Should also know the point-slope form we saw in class, namely $y - y_1 = m(x - x_1)$. Understand the slope of a line and how to write the equation from the graph, also how the slopes relate between parallel or perpendicular lines.
- 2.2 Concept of a function, graph of a function, evaluation of a function, piecewise defined functions,
- 2.4 Know the graphs of the function $y = mx + b$, $y = x^2$, $y = x^3$, $y = 1/x$ and $y = \lfloor x \rfloor = [[x]]$.
- 2.5 Transformations. You should be able to graph the function $y = f(x) + c$ and $y = f(x + c)$ from the graph of $y = f(x)$, whether $c > 0$ or $c < 0$. Same for $y = -f(x)$ and $y = f(-x)$. Finally you should be able to graph vertical stretches/shrinks $y = cf(x)$ and horizontal stretches/shrinks $y = f(cx)$.
- 2.6 From functions $f(x)$ and $g(x)$, should understand how to form the functions $(f+g)(x)$, $(f-g)(x)$, $(fg)(x)$, $(f/g)(x)$, $(f \circ g)(x)$ and $(g \circ f)(x)$ and find the domains for these functions. Important skill for Calc 1: given $h(x)$, find $f(x), g(x)$ so that $h(x) = (f \circ g)(x)$.
- 2.7 Inverse functions: the definition, finding the graph and the equation.
- 3.1 Quadratic functions $f(x) = ax^2 + bx + c$. Be able to complete the square to put the equation in standard form for the purpose of sketching the graph. Conversely, be able to find the standard form of the equation from the graph or from given information about the quadratic function.
- 3.2 Should be able to determine long term behavior of a polynomial function $f(x)$ from the leading coefficient test. Should understand zeros of a polynomials and their multiplicities for the purpose of sketching the graph near the x -intercepts.