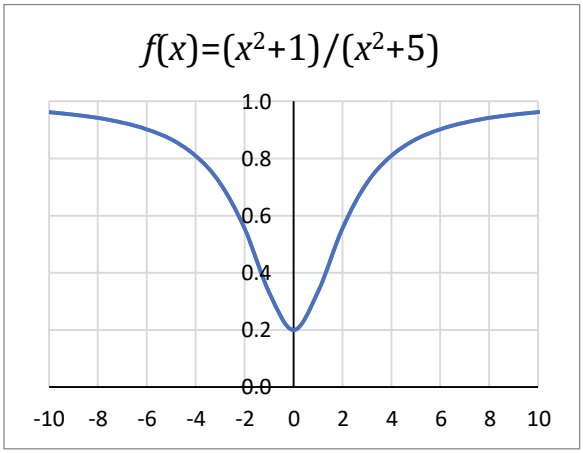
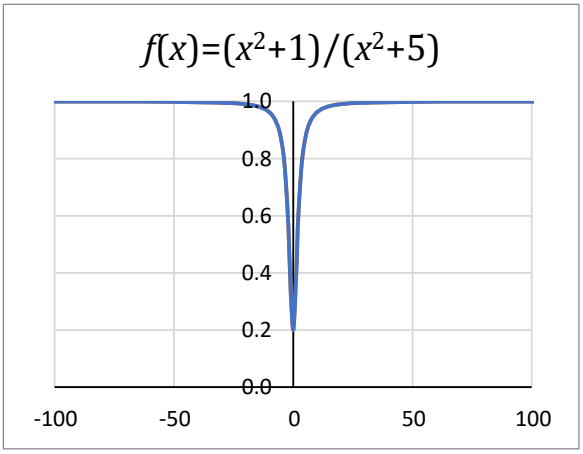
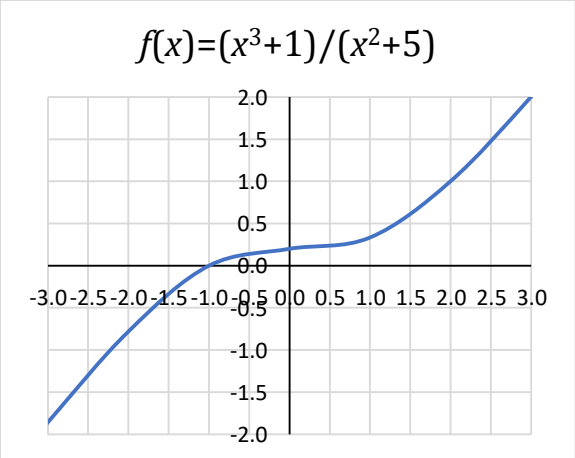
Rational Functions and Limits Homework

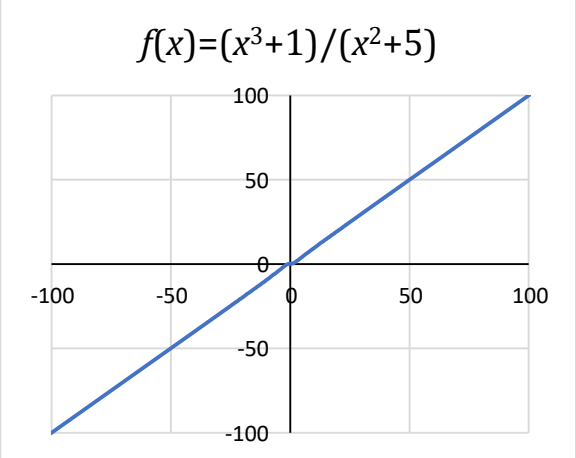
15a. The two graphs show different ranges of x to give you a better idea of the shapes.



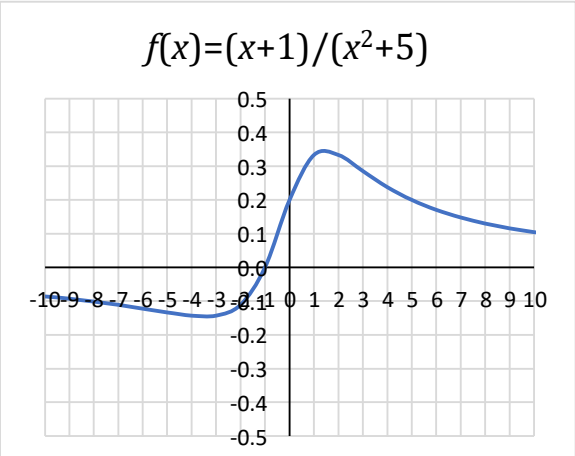


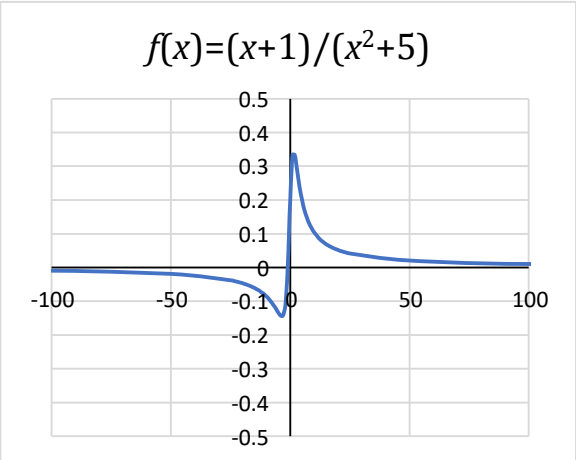
15b. Again, showing two different ranges of x to better show the shapes. Here note that x3/x2 generally gives you a line, but the fact that the numerator and denominator are polynomials prevent it from being strictly a line.



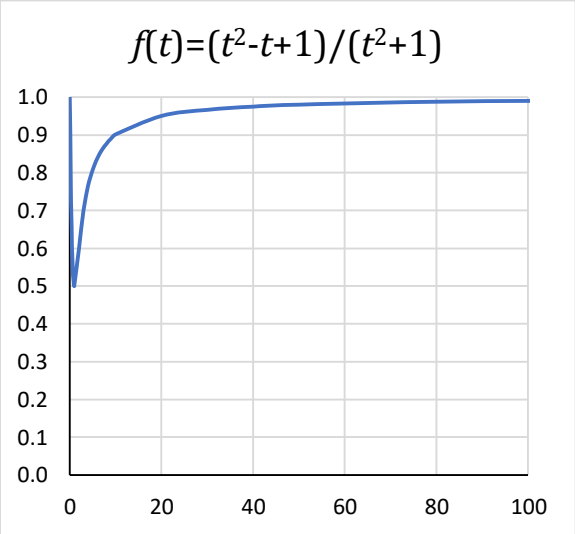


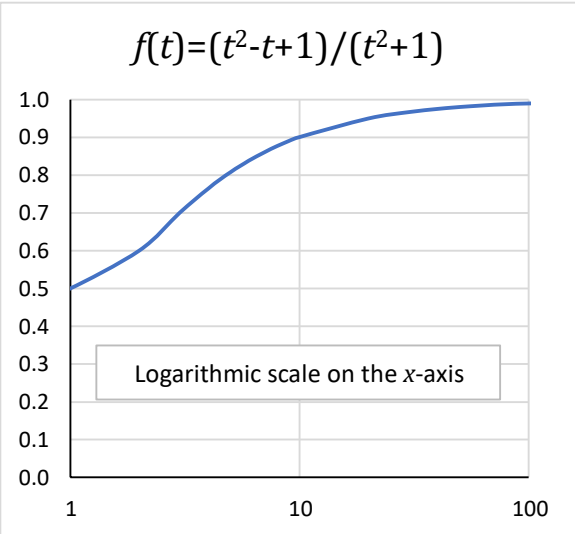
15c. Another with two ranges of x. This one is a twist on the hyperbola of 1/x but without the vertical asymptote(s).



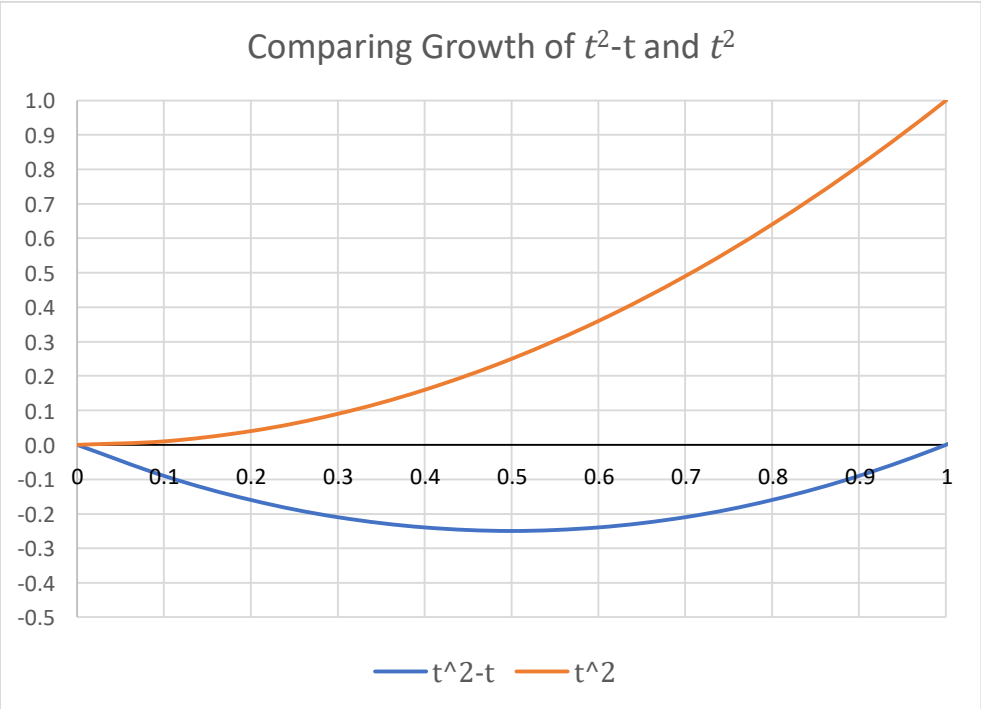


19. Second graph has x as a logarithmic scale instead of the linear scale you may be accustomed to. There is graph paper for this. The advantage of this kind of graph is when you have a function in the form $f(x) = 10^x$, which is common in engineering. With a logarithmic x-axis scale, this function graphs as a straight line.





The dip to $f(t) = 0.5$ at $t = 1$ is from the growth of $(t^2 - t)$ versus t^2 :



20. This one did not seem difficult. All I did was add the up-front investment by the publisher, $80,000, to the desired profit of $40,000 (which means generating $120,000 in total revenue), divided by the book sales to get revenue per book → price per copy.

	A	B
1	s	p
2	1000	120
3	2000	60
4	4000	30
5	6000	20

s: Book sales
p: Price per copy
Criteria: Recover $80k plus generate $40k profit

$p = (80{,}000 + 40{,}000) / s$