College Algebra: Quiz #10 (Solutions)

1. Find the domain of the following function.

$$f(x) = \frac{x^3 + x^2 + x + 6}{x^2 + 2x - 8}$$

Solution: Remember that two bad things can happen which may cause a number *not* to be in the domain of a function; variables in denominators and variables in radicals. Here we have a variable in a denominator. This function will be defined as long as that denominator is not zero. That is, at all real numbers *except* the solutions of the equation

$$x^2 + 2x - 8 = 0.$$

This equation is a quadratic, and using our favorite solving strategy we see that its solutions are $x = 2$ and $x = -4$. So the domain of f is

$$\boxed{\text{all real numbers } \textit{except } 2 \text{ and } -4.}$$