Important: As with everything else in life, being right is not enough. Please show your work, write in complete sentences, and explain your reasoning clearly.

(a) Stewart, Ch. 1.1, 1, 5-6, 12, 13.

(b) What is a function? (This is the most important question in all of mathematics.)

(c) Describe examples of functions from at least three of the following categories: biology; physics or chemistry; geometry; economics or business; geography.

(d) What are the domain and the range of a function? Give an example of a function whose domain is $[0, 5]$ and whose range is $[0, 3]$.

(e) Does the equation $x^2 + y^2 = 1$ describe $y$ as a function of $x$? Why or why not? Answer the same for the equation $x^2 + y = 1$.

(f) Stewart, Ch. 1.2, 10-12, 16.

(g) Define the trigonometric functions $\sin(x)$, $\cos(x)$, $\tan(x)$, $\sec(x)$, $\csc(x)$, and $\cot(x)$.

(h) Stewart, Ch. 1.3, 11-18 (show your work), 31, 32, 53, 56.

(i) Define the exponential and logarithmic functions $e^x$ and $\ln x$.

(j) Stewart, Ch. 1.5, 9-10.

(k) Define the term inverse function. Give an example of a function that has an inverse, and of a function that does not.

(l) Define the logarithmic functions $\log_a(x)$ and $\ln(x)$.

(m) Stewart, Ch. 1.6, 18 (in addition, graph the inverse of $f$), 21-24, 47-48.