Section 1.1, problem 54: corrected!

The domain of the function \( G(x) = \frac{x + 4}{x^3 - 4x} \) is \( \{ x : x \neq -2, 0, 2 \} \)
(because \( x^3 - 4x = x(x^2 - 4) = 0 \) if \( x = -2, x = 0 \) or \( x = 2 \))

Section 1.2, problem 42:

(a) The temperature of a bowl of soup as a function of time – graph II.
(b) The number of hours of daylight per day over a two-year period – graph V.
(c) The population of Texas as a function of time – graph IV.
(d) The distance traveled by a car going at a constant velocity as a function of time – graph III.
(e) The height of a golf ball hit with a 7-iron as a function of time – graph I.

Section 1.3, problem 34:

If \( f(x) = 2x^4 - x^2 \), then

\[
f(-x) = 2(-x)^4 - (-x)^2 = 2(-1)^4x^4 - (-1)^2x^2 = 2x^4 - x^2 = f(x),
\]
(because \( (-1)^4 = 1 \) so this function is even.)

Section 1.3, problem 68:

We have \( g(x) = x^2 + 1 \), so...

(a) The average rate of change from \( x = -1 \) to \( x = 2 \) is

\[
\frac{g(2) - g(-1)}{2 - (-1)} = \frac{5 - 2}{3} = 1.
\]

(b) The secant line connecting the points \((-1, g(-1))\) and \((2, g(2))\) has slope \( m = 1 \) (the average rate of change from (a)), and passes through the point \((-1, g(-1))\). We find its equation using the point-slope formula:

\[
y - g(-1) = m(x - (-1)) \implies y - 2 = 1(x + 1) \implies y = x + 3.
\]