Please let me know if you find any typos or errors in the answers below.

Section 2.1:
2, 0
4, -7
8, $-3x^2, -3$
10, $-2/x^3, -1/4$
22, $-1/(2x^{3/2}), -1/2, y = -x/2 + 3/2$
32, $1/(2-x)^2, 1$
38, $0, 1-4x, 1$

Section 2.2:
4, -2
6, $7x^{4/3}/3$
8, $1.2x^{-2.2}$
12, $3/(2x^{1/4})$
16, $15x^4 - 12x^2 + 9$
18, $2x^7 - 3x^5 - 1$
28, $5x^4 - 18x^2 + 14x$
38, $f'(x) = 3x^2 + 1/(2\sqrt{x}), y = 193x/4 - 127$
48, $f'(x) = 1 - 1/x^2, 0$
58, $200/(t+100)$
74, on Mars

Section 2.3:
2, $11 - 4x$
6, $(3/2)(-20 - 5/\sqrt{x} + 6\sqrt{x} + 16x - 35x^{5/2} - 80x^3)$
8, $23/(4+5x)^2$
12, $4t/(-1+t^2)^2$
14, $(-5 - 4t + t^2)/(-1 + 3t + t^2)^2$
16, $(-11 - 6x + 9x^2 - 4x^3)/(1 - 2x)^2$