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/m160.fa07/handouts160/q829/q829_160

These are alleged answers. For each error herein, you get extra-credit points for being the first to report it by e-mail.

1 Here's one possible solution path:

$$\begin{aligned}
 -2(x-2)(x+3)^{-3/2} + (x+3)^{-1/2} &= (x+3)^{-3/2}[-2(x-2) + (x+3)] \\
 &= (x+3)^{-3/2}[-2x+4+x+3] \\
 &= (x+3)^{-3/2}(-x+7) \\
 &= -\frac{x-7}{(x+3)^{3/2}}
 \end{aligned}$$

This is very close to problem 83, page 594.

2 If $f(x) = 52 - 2x - 3x^2$, then we can think of f this way:

$$f(\quad) = 52 - 2(\quad) - 3(\quad)^2.$$

We fill in the blanks:

$$\begin{aligned}
 f(x+h) &= 52 - 2(x+h) - 3(x+h)^2 \\
 &= 52 - 2x - 2h - 3[x^2 + 2xh + h^2] \\
 &= 52 - 2x - 2h - 3x^2 - 6xh - 3h^2,
 \end{aligned}$$

which is about as far as one can go. So the answer is

$$f(x+h) = 52 - 2x - 2h - 3x^2 - 6xh - 3h^2.$$

Note that

$$f(x+h) = f(x) - 2h - 6xh - 3h^2.$$