4.1.3) Tell whether each of these sets is linearly dependent or independent.

a.) {cosh (x), 2sinh (x), $5e^{x} - 2e^{-x}$}

$$5e^{x} - 2e^{-x} = 5(\cosh x + \sinh x) - 2(\cosh x - \sinh x)$$
$$5e^{x} - 2e^{-x} = 3\cosh x + 7\sinh x = c_1 \cosh x + c_2 \sinh x$$

This shows that this set is linearly dependent because one element is a linear combination of the others.

b.) $\{t, (t-5)^2, t^2\}$

$$(t-5)^2 = t^2 - 10t + 25$$
$$(t-5)^2 = c_1 t^2 + c_2 t + k$$

As you can see, this would be a linear combination of two other elements if it were not for the constant "*k*". Therefore, this is not a linear combination of the other two elements and is therefore linearly independent.