3.36 This problem asks for us to derive expressions for each of the three primed indices in terms of the four unprimed indices.

It is first necessary to do an expansion of Equation 3.6a as

$$u = \frac{1}{3}(2u' - v) = \frac{2u'}{3} - \frac{v'}{3}$$

And solving this expression for *v'* yields

$$v' = 2u' - 3u$$

Now, substitution of this expression into Equation 3.6b gives

$$v = \frac{1}{3}(2v' - u') = \frac{1}{3}\left[(2)(2u' - 3u) - u'\right] = u' - 2u$$

Or

$$u' = v + 2u$$

And, solving for *v* from Equation 3.6c leads to

$$v = -(u + t)$$

which, when substituted into the above expression for *u'* yields

$$u' = v + 2u = -u - t + 2u = u - t$$

In solving for an expression for *v'*, we begin with the one of the above expressions for this parameter—i.e.,

$$v' = 2u' - 3u$$

Now, substitution of the above expression for *u'* into this equation leads to

$$v' = 2u' - 3u = (2)(u - t) - 3u = -u - 2t$$

And solving for *u* from Equation 3.6c gives