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\{x1 \rightarrow x1 \text{ prime}, y1 \rightarrow y1 \text{ prime}, x2 \rightarrow x2 \text{ prime}, y2 \rightarrow y2 \text{ prime}, omega1 \rightarrow omega1 \text{ prime}, omega2 \rightarrow omega2 \text{ prime}, impulse \rightarrow 0\},
   \{x1 \rightarrow (-inertia \times 1prime Cos[phi + theta10]^2 + 2 inertia \times 2prime Cos[phi + theta10] Cos[phi + theta20] + inertia \times 1prime Cos[phi + theta20]^2 + inertia \times 1prime Cos[phi + theta10] Cos[phi + theta10]
                        2 inertia omegalprime w Cos[phi + theta10] Sin[theta10] + m w x 1prime Sin[theta10] 2 - 2 inertia v1prime Cos[phi + theta10] Sin[phi + theta10] + theta10]
                         inertia x1prime Sin[phi + theta10]^2 - 2 inertia omega2prime w Cos[phi + theta10] Sin[theta20] + m w^2 x1prime Sin[theta20]^2 +
                        2 inertia y2prime Cos[phi + theta10] Sin[phi + theta20] + inertia x1prime Sin[phi + theta20] ^{i} / (inertia Cos[phi + theta10] ^{i} + theta10] ^{i}
                        inertia Cos[phi + theta20]^2 + mw^2 Sin[theta10]^2 + inertia Sin[phi + theta10]^2 + mw^2 Sin[theta20]^2 + inertia Sin[phi + theta20]^2]
       v1 \rightarrow (inertia v1prime Cos(phi + theta10)^2 + inertia v1prime Cos(phi + theta20)^2 + m w^2 v1prime Sin(theta10)^2 - 2 inertia x1prime Cos(phi + theta10)
                            Sin[phi + theta10] + 2 inertia x2prime Cos[phi + theta20] Sin[phi + theta10] + 2 inertia omegalprime wSin[theta10] Sin[phi + theta10] -
                         inertia ylprime Sin[phi + theta10] ^2 - 2 inertia omega2prime w Sin[phi + theta10] Sin[theta20] + m w vlprime Sin[theta20] ^2 +
                        2 inertia y2prime Sin[phi + theta10] Sin[phi + theta20] + inertia y1prime Sin[phi + theta20] ^{2} / (inertia Cos[phi + theta10] ^{2} +
                        inertia Cos[phi + theta20]^2 + mw^2 Sin[theta10]^2 + inertia Sin[phi + theta10]^2 + mw^2 Sin[theta20]^2 + inertia Sin[phi + theta20]^2),
       x2 \rightarrow (inertia \times 2prime Cos[phi + theta10]^2 + 2inertia \times 1prime Cos[phi + theta10] Cos[phi + theta20] - inertia \times 2prime Cos[phi + theta20]^2 - inertia \times 2prime Cos[phi + theta10]^2 + 2inertia \times 2pri
                         2 inertia omegalprime w Cos[phi + theta20] Sin[theta10] + m w² x2prime Sin[theta10] + 2 inertia v1prime Cos[phi + theta20] Sin[phi + theta10] +
                         inertia x2prime Sin[phi + theta10]^2 + 2 inertia omega2prime w Cos[phi + theta20] Sin[theta20] + m w x2prime Sin[theta20]^2 -
                        2 inertia y2prime Cos[phi + theta20] Sin[phi + theta20] + inertia x2prime Sin[phi + theta20] ^{2} / (inertia Cos[phi + theta10] ^{2} +
                        inertia Cos[phi + theta20] ^2 + m w Sin[theta10] ^2 + inertia Sin[phi + theta10] ^2 + m w Sin[theta20] ^2 + inertia Sin[phi + theta20] ^2),
       y2 \rightarrow (inertia y2prime Cos[phi + theta10]^2 + inertia y2prime Cos[phi + theta20]^2 + m w^2 y2prime Sin[theta10]^2 + inertia y2prime Sin[phi + theta10]^2 + inertia y2prime Si
                         m w^2 v2prime Sin[theta20]^2 + 2 inertia x1prime Cos[phi + theta10] Sin[phi + theta20] - 2 inertia x2prime Cos[phi + theta20] Sin[phi + theta20] -
                         2 inertia omegalprime w Sin[theta10] Sin[phi + theta20] + 2 inertia ylprime Sin[phi + theta10] Sin[phi + theta20] +
                         2 inertia omega2prime w Sin[theta20] Sin[phi + theta20] - inertia y2prime Sin[phi + theta20]^{i} / (inertia Cos[phi + theta10]^{i} +
                        inertia Cos[phi + theta20]^2 + mw^2 Sin[theta10]^2 + inertia Sin[phi + theta10]^2 + mw^2 Sin[theta20]^2 + inertia Sin[phi + theta20]^2),
       omegal \rightarrow (inertia omegalprime Cos(phi + theta10) + inertia omegalprime Cos(phi + theta20) + 2 m w x1prime Cos(phi + theta10) Sin(theta10) -
                         2 m w x2prime Cos[phi + theta20] Sin[theta10] - m omega1prime w^2 Sin[theta10] + 2 m w v1prime Sin[theta10] Sin[phi + theta10] +
                        inertia omegalprime Sin[phi + theta10]^2 + 2 m omega2prime w^2 Sin[theta10] Sin[theta20] + m omega1prime w^2 Sin[theta20]^2 -
                        2 m w y2prime Sin[theta10] Sin[phi + theta20] + inertia omega1prime Sin[phi + theta20]^{i} / (inertia Cos[phi + theta10]^{i} +
                        inertia Cos[phi + theta20] ^2 + m w Sin[theta10] ^2 + inertia Sin[phi + theta10] ^2 + m w Sin[theta20] ^2 + inertia Sin[phi + theta20] ^2),
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x2 \rightarrow (inertia \times 2prime Cos[phi + theta10]^2 + 2 inertia \times 1prime Cos[phi + theta10] Cos[phi + theta20] - inertia \times 2prime Cos[phi + theta20]^2 - inertia \times 2prime Cos[phi + theta10]^2 + 2 inertia \times 1prime Cos[phi + theta10]^2 + 2 inertia \times
                             2 inertia omegalprime w Cos[phi + theta20] Sin[theta10] + m w^2 x 2 prime <math>Sin[theta10]^2 + 2 inertia v1prime Cos[phi + theta20] Sin[phi + theta10] + m v2
                             inertia x2prime Sin[phi + theta10]^{2} + 2 inertia omega2prime w Cos[phi + theta20] Sin[theta20] + m w x2prime Sin[theta20]^{2} -
                             2 inertia y2prime Cos[phi + theta20] Sin[phi + theta20] + inertia x2prime Sin[phi + theta20]^{2} / (inertia Cos[phi + theta10]^{2} +
                             inertia Cos[phi + theta20]^{2} + m w^{2} Sin[theta10]^{2} + inertia Sin[phi + theta10]^{2} + m w^{2} Sin[theta20]^{2} + inertia Sin[phi + theta20]^{2}),
v2 \rightarrow \left[\text{inertia } v2 \text{prime Cos} \right]^{2} + \text{inertia } v2 \text{prime Cos} \left[\text{phi} + \text{theta20}\right]^{2} + \text{m} v^{2} v2 \text{prime Sin} \left[\text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} + \text{theta10}\right]^{2} + \text{inertia } v2 \text{prime Sin} \left[\text{phi} +
                             m w^2 v 2 prime Sin[theta20]^2 + 2 inertia x 1 prime Cos[phi + theta10] Sin[phi + theta20] - 2 inertia x 2 prime Cos[phi + theta20] Sin[phi + theta20] - 1 theta20] Sin[phi + theta20]
                              2 inertia omegalprime w Sin [theta10] Sin [phi + theta20] + 2 inertia v1prime Sin [phi + theta10] Sin [phi + theta20] +
                              2 inertia omega2prime w Sin[theta20] Sin[phi + theta20] - inertia y2prime Sin[phi + theta20]^{2} / (inertia Cos[phi + theta10]^{2} +
                             inertia Cos[phi + theta20]^2 + mw^2 Sin[theta10]^2 + inertia Sin[phi + theta10]^2 + mw^2 Sin[theta20]^2 + inertia Sin[phi + theta20]^2),
omega1 \rightarrow (inertia\ omega1prime\ Cos[phi + theta10]^2 + inertia\ omega1prime\ Cos[phi + theta20]^2 + 2 m w x1prime\ Cos[phi + theta10] - 1 m m x1prime\ Cos[phi + theta10] = 
                             2 \text{ m w x} 2 \text{ prime Cos} \text{ [phi+theta20] Sin[theta10]} - \text{m omegalprime w}^2 \text{Sin[theta10]}^2 + 2 \text{ m w v} 1 \text{ prime Sin[theta10] Sin[phi+theta10]} + \text{theta10]} + \text{theta10} + 
                             inertia omegalprime Sin[phi + theta10]^2 + 2 m omega2prime w^2 Sin[theta10] Sin[theta20] + m omega1prime w^2 Sin[theta20]^2 -
                             2 \text{ m w y2prime Sin[theta10] Sin[phi+theta20]} + inertia omega1prime Sin[phi+theta20]^{2} / (inertia Cos[phi+theta10]^{2} + inertia omega1prime Sin[phi+theta20]^{2} / (inertia Cos[phi+theta10]^{2} + inertia Os[phi+theta10]^{2} / (inertia Cos[phi+theta10]^{2} + inertia Os[phi+theta10]^{2} / (inertia Cos[phi+theta10]^{2} + inertia Os[phi+theta10]^{2} / (inertia Cos[phi+theta10]^{2} / (inertia Cos[phi+theta10]^
                             inertia Cos[phi + theta20]^{i} + mw^{i}Sin[theta10]^{i} + inertia Sin[phi + theta10]^{i} + mw^{i}Sin[theta20]^{i} + inertia Sin[phi + theta20]^{i},
omega2 → (inertia omega2prime Cos[phi + theta10] + inertia omega2prime Cos[phi + theta20] + m omega2prime w Sin[theta10] + inertia omega2prime Cos[phi + theta20] + m omega2prime w Sin[theta10] + inertia omega2prime Cos[phi + theta20] + m omega2prime w Sin[theta10] + inertia omega2prime Cos[phi + theta20] + m omega2prime Cos[phi 
                             inertia omega2prime Sin[phi + theta10]2 - 2 m w x1prime Cos[phi + theta10] Sin[theta20] + 2 m w x2prime Cos[phi + theta20] Sin[theta20] +
                             2 m omega1prime w^2 Sin[theta10] Sin[theta20] - 2 m w v1prime Sin[phi + theta10] Sin[theta20] - m omega2prime w^2 Sin[theta20] ^2 +
                             2 m wy2prime Sin[theta20] Sin[phi + theta20] + inertia omega2prime Sin[phi + theta20]^2 / (inertia Cos[phi + theta10]^2 +
                             inertia Cos[phi + theta20]^2 + mw^2 Sin[theta10]^2 + inertia Sin[phi + theta10]^2 + mw^2 Sin[theta20]^2 + inertia Sin[phi + theta20]^2),
impulse → - (2 inertiam (x1prime Cos[phi + theta10] - x2prime Cos[phi + theta20] - omega1prime w Sin[theta10] +
                                                  ylprime Sin[phi + theta10] + omega2prime w Sin[theta20] - y2prime Sin[phi + theta20])) / (inertia Cos[phi + theta10] theta10)
                                   inertia Cos[phi + theta20]^2 + mw^2 Sin[theta10]^2 + inertia Sin[phi + theta10]^2 + mw^2 Sin[theta20]^2 + inertia Sin[phi + theta20]^2)
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