$r(t) = r$

Taylor: $P_n(x) = f(a) + \frac{f'(a)}{1!}(x-a) + \frac{f''(a)}{2!}(x-a)^2 + \frac{f'''(a)}{3!}(x-a)^3 + \dots$

$v = \frac{dr}{dt} = \dot{r}$

$$r = r_n + h v_n + \frac{h^2}{2} a_n + \dots$$

$a = \frac{d^2 r}{dt^2} = \ddot{r}$

$$r_{n+1} = r_n + h v_n + \frac{h^2}{2} \sum_{p=1}^{-1} b_p a_{n-p+1}$$

$$r_{n+1} = r_n + h v_n + \frac{h^2}{6}\left(4 a_n + b_0 a_{n+1} - a_{n+2}\right)$$

$$h v_{n+1} = r_{n+1} - r_n + h^2 \sum_{q=1}^{-1} d_q a_{n-q+2}$$

$$h v_{n+1} = r_{n+1} - r_n + h^2\left(d_1 a_{n+1} + d_0 a_{n+2} + d_{-1} a_{n+3}\right)$$

$$v_{n+1} = v_n + \frac{h}{3}\left(2 a_{n+1} + d_0 a_{n+2} + d_{-1} a_{n+3}\right).$$