

3.6.69 Find  $dy/dt$  where  $y = (3t)(2t^2 - 5)^4$ .

Solution

We apply the Product Rule (3.3.6) and the Chain Rule (Theorem 3.2) to get

$$\frac{dy}{dt} = [3] (2t^2 - 5)^4 + (3t) [4(2t^2 - 5)^3 [4t]]$$

$$= 3(2t^2 - 5)^3 ((2t^2 - 5) + 16t^2)$$

$$= 3(2t^2 - 5)^3 (18t^2 - 5). \quad \square$$