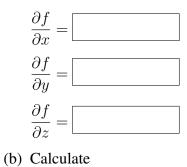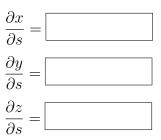Let

$$f(x, y, z) = xy^4 + z, \quad x = s^3 t, \quad y = s^2 t^2, \quad z = st.$$

(a) Calculate the primary derivatives

$$\frac{\partial f}{\partial x} = \boxed{}$$

$$\frac{\partial f}{\partial y} = \boxed{}$$

$$\frac{\partial f}{\partial z} = \boxed{}$$

(b) Calculate

$$\frac{\partial x}{\partial s} = \boxed{}$$

$$\frac{\partial y}{\partial s} = \boxed{}$$

$$\frac{\partial z}{\partial s} = \boxed{}$$

(c) Use the Chain Rule to compute

$$\frac{\partial f}{\partial s} = \boxed{}$$
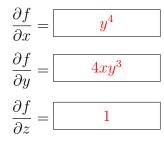
In (c) express your answer in terms of the independent variables t, s.
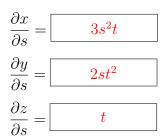
Let

$$f(x, y, z) = xy^4 + z, \quad x = s^3t, \quad y = s^2t^2, \quad z = st.$$

(a) Calculate the primary derivatives

$$\frac{\partial f}{\partial x} = \boxed{y^4}$$

$$\frac{\partial f}{\partial y} = \boxed{4xy^3}$$

$$\frac{\partial f}{\partial z} = \boxed{1}$$

(b) Calculate

$$\frac{\partial x}{\partial s} = \boxed{3s^2t}$$

$$\frac{\partial y}{\partial s} = \boxed{2st^2}$$

$$\frac{\partial z}{\partial s} = \boxed{t}$$

(c) Use the Chain Rule to compute

$$\frac{\partial f}{\partial s} = \boxed{11s^{10}t^9 + t}$$

In (c) express your answer in terms of the independent variables t, s.