

Avery Tumbull

$$1) \frac{df}{dx} = 2x + 2y^2$$

$$dx/dr = 1$$

$$dx/ds = 2$$

$$\frac{df}{dy} = 4xy + 6y^2$$

$$dy/dr = 3$$

$$dy/ds = 2$$

$$\frac{df}{dr} = (2x + 2y^2) + 3(4xy + 6y^2)$$

$$\frac{df}{ds} = 2(2x + 2y^2) + 2(4xy + 6y^2)$$

$$2) \frac{dz}{dx} = -5xy \frac{dz}{dx} + 2z \frac{dz}{dx}$$

$$\frac{dz}{dy} = -5yx \frac{dz}{dy} + 2z \frac{dz}{dy}$$

$$\frac{dz}{dx} = \frac{-2x + 5yz}{-5xy + 2z}$$

$$\frac{dz}{dy} = \frac{2y + 5xz}{-5yx + 2z}$$