TOTAL DIFFERENTIAL

For each of the following functions, find the total differential.

1. $z = f(x,y) = x^3y^2$

2. $z = f(x,y) = \sin(x^3y^2)$

3. $z = f(x,y) = \sqrt{x^3y^2}$

4. $z = f(x,y) = \sec(x^3y^2)$

5. $z = f(x,y) = \tan(x^3y^2)$

6. $z = f(x,y) = \sin^{-1}(x^3y^2)$

7. $z = f(x,y) = \sqrt[3]{x^2 + y + 4}$

8. $z = f(x,y) = e^{-(x^2+y^2)}$

9. $z = f(x,y) = \ln(xy)$

10. $z = f(x,y) = \dfrac{xy+1}{x+y}$