

## WORKSHEET: REVIEW OF IMPLICIT DIFFERENTIATION

Names and student IDs: \_\_\_\_\_

Don't forget the chain rule when doing implicit differentiation.

Also, in every problem you must solve for  $\frac{dy}{dx}$  (or  $y'(x)$  if you use function notation). This can always be done, since the equation one gets from implicit differentiation is always linear in  $\frac{dy}{dx}$ , but it is a frequent source of errors.

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In each of the following problems, find  $\frac{dy}{dx}$  by implicit differentiation, and solve for  $\frac{dy}{dx}$ .

1.  $y^4 = \cos(6x + y) - \ln(7)$ .

2.  $\tan(yx) = 2x + y + \pi^4$ .

3.  $x \arctan(xy) = e^2 + \frac{x}{y}$ .

4.  $\ln(2x + 3y^5) = (3x - 2y)^4 + \arctan(9)$ . (Use the back of the page.)

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