

## Math 30 – Workshop #14

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1. Use implicit differentiation to find  $\frac{dy}{dx}$  at  $(2, -3)$  for the curve below.

$$xy^2 + x^3y = y - x^2 + 1$$

2. On the curve  $x^2 + 2xy - y^2 + 2y + 4 = 0$ , find all points where the tangent line is parallel to the tangent line at  $(-2, 2)$ .
3. Find an equation for the line that is tangent to the graph of  $(x^2 - y^2)^{\frac{1}{2}} = x + y - 6$  at  $(5, 4)$ .
4. Differentiate the following functions.

(a)  $g(x) = \ln(x^2 + \ln x)$

(b)  $f(x) = \ln(x^2 + x \cos x)$

(c)  $f(x) = \frac{\sin \sqrt{x}}{\ln x}$