Calculus I	**Name:** _____
Study Guide 12	**Class:** _____
Due Date: _____	**Score:** _____

No Work ⇔ No Points

Use Pencil Only ⇔ Be Neat & Organized

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1. Find $\dfrac{dy}{dx}$ by implicit differentiation:

   (a) (2 points) $xy = x + y$

   (a) _____

   (b) (2 points) $\sqrt{x} + \sqrt{y} = 1$

   (b) _____

   (c) (3 points) $x = \csc y^2$

   (c) _____

(d) (3 points) $x \cot y = \dfrac{1}{y}$

(d) _____

(e) (3 points) $x^3 + y^2 - 4xy = 0$

(e) _____

2. (3 points) Find the equation of the tangent line to the graph of $y^2x - 5yx^2 + 6 = 0$ at $(1, 3)$.

2. _____

3. (3 points) Find the equation of the normal line to the graph of $\cos(xy) = x - 1$ at the point $(1, \pi/2)$.

3. _____

4. (4 points) Find the equation of the tangent line to the graph of $\sin(xy) = x$ at the point $(0, \pi)$.

4. _____

5. (3 points) Use linear approximation to estimate $\sqrt{5}$.

5. _____

6. (4 points) Use linear approximation to estimate $\sin 88^\circ$.

6. _____

7. (4 points) Use linear approximation to estimate $\sec^2 61^\circ$.

7. _____

8. (4 points) Use linear approximation to estimate $\sqrt[4]{18}$.

8. _____

9. (4 points) Use linear approximation to estimate $(9.99)^3$.

9. _____

10. (4 points) Use linear approximation to estimate $\cot 33^\circ$.

10. _____

11. (4 points) Use linear approximation to estimate $\csc^2 46^\circ$.

11. _____