

Quiz 6

● Graded

Student

Colin Cano

Total Points

9.5 / 10 pts

Question 1

Question 1

3 / 3 pts

✓ - 0 pts Equivalently Correct as: $y - \sqrt{2} = \frac{7\sqrt{2}}{8}(x - 2)$.

- 0.5 pts Point-slope form is incorrect.
- 0.5 pts Incorrect y' value after plugging in the given point.
- 0.5 pts Separate y' from the equation incorrectly.
- 0.5 pts Product rule is applied incorrectly.
- 1 pt Implicit differentiation is applied incorrectly.
- 0.5 pts Algebraic mistake.
- 3 pts No correct work.

1 You could have simplified $12\sqrt{2} - 4\sqrt{2} = 8\sqrt{2}$

Question 2

Question 2

2.5 / 3 pts

- 0 pts Equivalently correct as $\frac{1}{x(x+1)}$
- 1 pt Chain rule is applied incorrectly for y' .
- 1 pt Incorrect derivative of $\frac{x}{x+1}$ using quotient rule.
- 0.5 pts Incorrect derivative of $\ln(x)$.

✓ - 0.5 pts Algebraic mistake

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- 3 pts No correct work

Question 3

Question 3

4 / 4 pts

✓ - 0 pts Equivalently correct as: $\frac{1}{2x\sqrt{x-1}}$

- 1 pt Chain rule is applied incorrectly for y' .
- 1 pt Incorrect derivative for $\sqrt{x-1}$ using chain rule.
- 1 pt Incorrect derivative of $\tan^{-1}(x)$
- 0.5 pts Algebraic mistake
- 4 pts No correct work

💬 You could have simplified a lot more

Name: Colin Cano Student ID: _____

1. (4 points) Find the equation of the tangent line to the following curve at a given point.

$$y - \sqrt{2} = \frac{14}{12(\sqrt{2})} (x - 2)$$

$$y^2(6-x) = x^3, \text{ at } (2, \sqrt{2})$$

$$y^2(6-x) = x^3 \Rightarrow (6y^2 - xy^2) - x^3 = 0$$

$$12y \frac{dy}{dx} - (y^2 + x2y \frac{dy}{dx}) - 3x^2 = 0$$

$$\frac{3x^2 + y^2}{12y - 2yx} = \frac{dy}{dx}$$

$$\frac{3(2)^2 + (\sqrt{2})^2}{12(\sqrt{2}) - 2(\sqrt{2})(2)} = \frac{12+2}{12(\sqrt{2}) - 4(\sqrt{2})} =$$

2. (3 points) Differentiate the following function and simplify where possible: $y = \ln\left(\frac{x}{x+1}\right)$

$$h(x) = \ln x$$

$$g(x) = \frac{x}{x+1}$$

$$\frac{dy}{dx} = \frac{1}{\left(\frac{x}{x+1}\right)^2} \cdot \frac{x+1}{x} = \frac{x+1}{x(x+1)^2}$$

$$g'(x) = \left(1 - \frac{1}{x+1}\right) - \frac{x}{(x+1)^2} = \frac{x}{(x+1)^2}$$

3. (4 points) Differentiate the following function and simplify where possible: $y = \arctan \sqrt{x-1}$

$$y = \arctan \sqrt{x-1}$$

$$y' = \frac{1}{1+(\sqrt{x-1})^2} \cdot \frac{1}{2}(x-1)^{-1/2} =$$

$$\frac{\frac{1}{2}(x-1)^{-1/2}}{1+(\sqrt{x-1})^2}$$

$$h(x) = \sqrt{x-1} = (x-1)^{1/2}$$

$$h'(x) = \frac{1}{2}(x-1)^{-1/2} \cdot 1$$

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