Homework 3 feedback

17/20

1. There was a small arithmetic error in part (b), should be $\frac{2}{\sqrt{21}}$.
2. Good!
3. In the last equation, since $\cot(\operatorname{arccot}(x)) = x$, may as well write the derivative as $\frac{-1}{x^2+1}$, which is much simpler.
4. Make sure you keep track that the derivative is negative! $-\frac{(\sqrt{96})}{2}(2)$ is correct, but $4\sqrt{6}$ after needs a minus sign.
5. (1/2) For (b), f' should be evaluated at 2025, not 45. (2025 is the x-coordinate, 45 is the y-coordinate.) Then, the slope is $\frac{1}{90}$, and the approximation we get is $45 - \frac{2}{90} = 45 - \frac{1}{45} = \frac{2024}{45}$.
6. (1/2) Correctly found that $y = 1/2$ is a critical point, not sure where $y = 0.75$ came from... When $y = 1/2$, the area is $-3 \cdot \frac{1}{2} \cdot \frac{-1}{2} = \frac{3}{4}$, and this is the maximum.
7. (1/2) Part (d) is possible; consider $f(x) = \sqrt{x}$.
8. Good!
9. Good!