Exam 1 Oct. 6, 2005 SHOW ALL WORK

Math 25 Calculus I Either circle your answers or place on answer line.

[15] 1.) Calculate the following limit: $lim_{x\to+\infty}\frac{\sqrt{4x^2+9x+8}}{5x+4}$

Answer 1.) ______________________________

[15] 2.) Find the derivative of $f(x) = \sqrt{x}$ by using the definition of derivative.

Answer 2.) ______________________________

Find the following derivatives

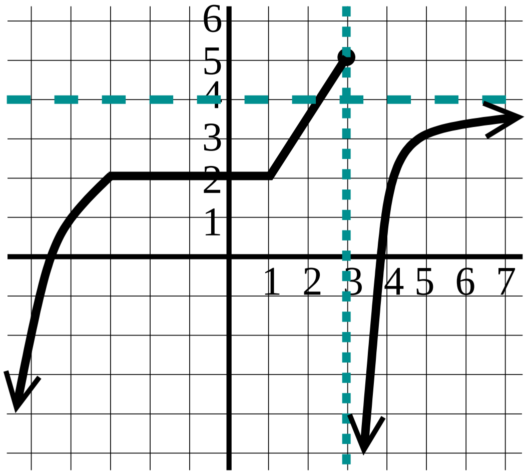
[15] 3.) $\frac{d}{dx}[\frac{e^x(x^2-x+3)}{cos(2x)}]$

Answer 3.) ____________________

[15] 4.) $\frac{d}{dx}[2sin(e^{x^3}+4)]$

Answer 4.) ____________________

5.) Answer the following questions based on the graph of f given below.



[2] 5a.) domain of $f =$ ___________ [2] 5b.) range of $f =$ ___________

[1] 5c.) Is f one-to-one? ___________ [2] 5d.) Does f^{-1} exist? ___________

[1] 5e.) $f(1) =$ ___________ [2] 5g.) $f'(-1) =$ ___________

[2] 5f.) Solve $f(x) = 1$: ___________

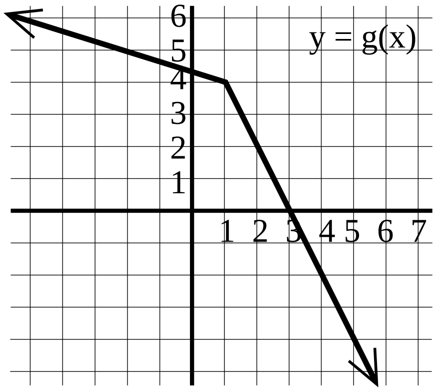
[2] 5i.) $lim_{x \to +\infty} f(x) =$ ___________ [2] 5j.) $lim_{x \to -\infty} f(x) =$ ___________

[2] 5k.) $lim_{x \to 3^+} f(x) =$ ___________ [2] 5l.) $lim_{x \to 3^-} f(x) =$ ___________

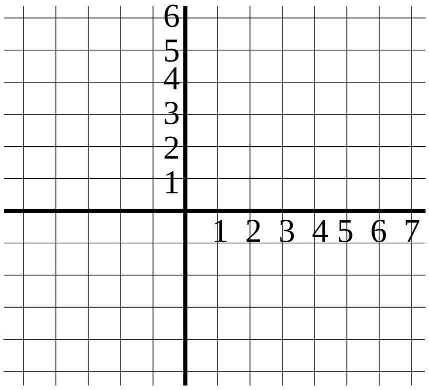
[2] 5m.) State all points where f is not continuous: ___________________________

[2] 5n.) State all points where f is not differentiable: ___________________________

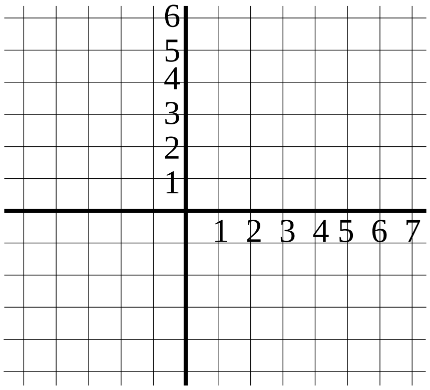
6.) Given the graph of $y = g(x)$ below, draw the following graphs:



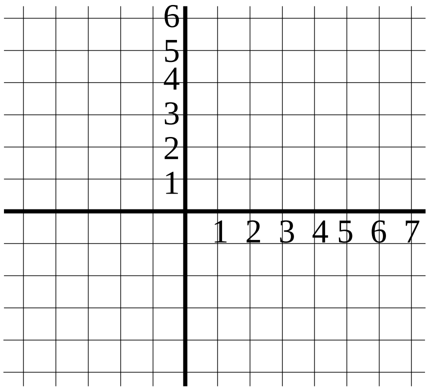
[4] 6a.) $y = g(x+3)$



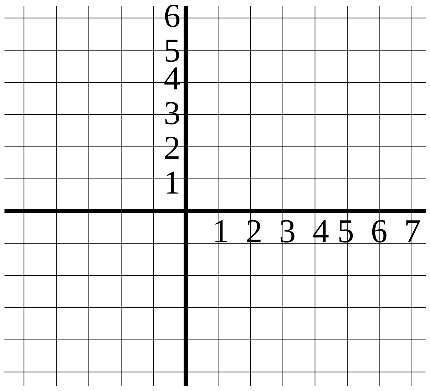
[4] 6b.) $y = \dfrac{1}{g(x)}$



[4] 6c.) $y = g^{-1}(x)$



[4] 6d.) $y = g'(x)$



[2] 6e.) Where is g differentiable?