## **GROUP QUIZ 3 QUESTIONS**

## TAKE HOME QUIZ TAKE HOME QUIZ TAKE HOME QUIZ

Find all asymptotes for the following functions. For each vertical asymptote, determine both one-sided limits. Show proper algebraic work and write using proper notation as shown in class.

[a] 
$$f(x) = \frac{\sqrt{5x^6 + x^2 - 1}}{2x^3 - 8}$$
  
[b]  $f(x) = \frac{11 - 7(0.2^x)}{17(0.2^x) + 13}$ 

Find all discontinuities for the following functions. Determine whether each discontinuity is removable, jump or infinite. Show proper algebraic work and write using proper notation as shown in class.

$$\begin{aligned} \mathbf{a} & f(x) = \begin{cases} 3x+1 & \text{if } x < -2 \\ 1-2x^{-1} & \text{if } -2 < x < 1 \\ 4x-5 & \text{if } x \ge 1 \end{cases} \\ \mathbf{b} & f(x) = \begin{cases} 1-\cos x & \text{if } x < 0 \\ \tan x & \text{if } 0 < x < \pi \\ \sin x & \text{if } x \ge \pi \end{cases} \end{aligned}$$

Prove that the following equations have solutions in the interval

Show proper justification.

 $e^x =$ 

 $\tan^{-1} x = x$ 

.

[3]

[a]

[b]

[1]

[2]

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