

Name _____

- 20 minutes
- No calculators
- Show sufficient work
- Do not use derivatives

1. (2 points) Evaluate $\cos(2 \arctan(2/3))$.

2. (2 points each) Evaluate the following limits. An answer of 'does not exist' is not sufficient. For infinite limits you must state if it is ∞ or $-\infty$.

(a) $\lim_{x \rightarrow \infty} \frac{8e^x + 5}{3 + 4e^x}$

$$(b) \lim_{x \rightarrow \pi^+} \frac{x^2}{\sin x}$$

$$(c) \lim_{x \rightarrow 4} \frac{x - 4}{5 - \sqrt{3x + 13}}$$

3. (2 points) Determine an equation for each vertical asymptote on the graph of the following function. Your answer must be justified using limits.

$$f(x) = \frac{x^2 + x - 6}{2x^2 - 8}$$