

Name _____

- You have 15 minutes
- No calculators
- Show sufficient work

1. (2 points) Evaluate $\sin(2 \arcsin(5/13))$.

2. (3 points) Let $f(x) = \frac{10e^x + 1}{6 - 2e^x}$.

(a) Find all horizontal asymptotes on the graph of $f(x)$.

(b) Find all vertical asymptotes on the graph of $f(x)$.

3. (2 points each) Evaluate the following limits.

$$(a) \lim_{x \rightarrow e^+} \frac{x^2}{1 - \ln x}$$

$$(b) \lim_{x \rightarrow 0} \frac{\sqrt{9+x} - 3}{2x}$$

4. (1 point) Which one of the following equations must hold in order for a function w to be continuous at a number b ?

$$(a) \lim_{x \rightarrow 0} w(x) = b$$

$$(b) \lim_{x \rightarrow 0} w(x) = 0$$

$$(c) \lim_{x \rightarrow 0} w(x) = w(b)$$

$$(d) \lim_{x \rightarrow b} w(x) = b$$

$$(e) \lim_{x \rightarrow b} w(x) = 0$$

$$(f) \lim_{x \rightarrow b} w(x) = w(b)$$

$$(g) \lim_{x \rightarrow \infty} w(x) = b$$

$$(h) \lim_{x \rightarrow \infty} w(x) = 0$$

$$(i) \lim_{x \rightarrow \infty} w(x) = w(b)$$