1. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{3x}{x - 8} \]

2. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{4x}{6x^2 - 8} \]

3. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{4x^2 + 3\sin(x)}{x^2 + 9\cos(x)} \]

4. (1 pt) 
Find the following limit.
\[ \lim_{x \to -\infty} \frac{-x + 1}{-6x - 9} \]

5. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \sqrt[3]{\frac{6x + 2}{5x^5 + 10}} \]

6. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{3}{4x^2 - 24x} \]

7. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{8\cos(x)}{x} \]

8. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} 4\sin \left( \frac{1}{x} \right) \]

9. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \sqrt[3]{\frac{6x + 2}{5x^5 + 10}} \]

10. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{\sqrt{6x^2 + 7}}{x + 7} \]

11. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{8x^2 - 8x - 2}{(2x - 3)(x + 3)} \]

12. (1 pt) 
Find the following limit.
\[ \lim_{x \to -2.3} \frac{16x^2 - 24x}{|4x - 6|} \]

13. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{\sqrt{8x^3 + 5x + 10}}{1x^2} \]

14. (1 pt) 
Find the following limit.
\[ \lim_{x \to \infty} \frac{\sqrt{8x^3 + 5x + 10}}{1x^2} \]

When a spaceship accelerates to speeds close to the speed of light, it appears to contract lengthwise. The formula for their apparent length is
\[ L = L_0 \sqrt{1 - \frac{v^2}{c^2}} \]
where \( L_0 \) is the length of the spaceship when it is not moving, \( v \) is the velocity of the object, and \( c \) is the speed of light.

If the spaceship is 84 meters long at rest, and is moving at \( v = 0.5c \), how long will it appear to be?

\[ \text{meters} \]

As the speed of the spaceship approaches \( c \), what is the limit of its length (i.e., what is \( \lim_{v \to c} \sqrt{1 - \frac{v^2}{c^2}} \))?

\[ \text{meters} \]