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Instructions: Please show all of your work as partial credit will be given where appropriate, and there may be no credit given for problems where there is no work shown. All answers should be completely simplified, unless otherwise stated. (Note: This quiz is on both sides of the paper.)

1. Find each limit, if it exists. (5 pts)

(a) $\lim_{x \rightarrow \infty} \frac{2x^3 + 4x^2 - 3x}{5x^4 - 7x}$

$$\lim_{x \rightarrow \infty} \frac{2x^3 + 4x^2 - 3x}{5x^4 - 7x} \cdot \frac{(\frac{1}{x^4})}{(\frac{1}{x^4})} = \lim_{x \rightarrow \infty} \frac{\frac{2}{x} + \frac{4}{x^2} - \frac{3}{x^3}}{5 - \frac{7}{x^3}} = \frac{0}{5} = 0$$

Answer 1(a):

$\boxed{0}$

(b) $\lim_{x \rightarrow \infty} \frac{6x + 3\sqrt{x^3} - 5}{-\sqrt{18x^3} + 1}$ (5 pts)

$$\lim_{x \rightarrow \infty} \frac{6x + 3\sqrt{x^3} - 5}{-\sqrt{18x^3} + 1} = \lim_{x \rightarrow \infty} \frac{\frac{6}{\sqrt{x}} + 3 - \frac{5}{x^{3/2}}}{-\sqrt{18} + \frac{1}{x^{3/2}}} = \frac{0 + 3 - 0}{-\sqrt{18} + 0} = -\frac{3}{\sqrt{18}} = -\frac{1}{\sqrt{2}}$$

Answer 1(b):

$\boxed{-\frac{1}{\sqrt{2}}}$

2. State whether this function is continuous or not. If the function is discontinuous, give the x-values where the discontinuities occur and also state why it's discontinuous.

$$f(x) = \frac{x^2 - 16}{x + 4}$$

continuous: Yes or No (circle one) (1 pt)If no: it's discontinuous when $x =$ -4 (1 pt)why is it discontinuous? Division by 0 (3 pts)