

1. (16 pts.) Find the following limits, be sure to show your work:

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

(b) $\lim_{x \rightarrow a} \frac{4a^2 - 4x^2}{2a - 2x} =$

(c) $\lim_{x \rightarrow a} \frac{4a^2 - 4x^2 + 1}{2a - 2x - 3} =$

(d) $\lim_{x \rightarrow 0} \frac{\cos(2x) - \cos(x)}{\sin(x) + \cos(x) + x - 1} =$

2. (4 pts.) Given the function $f(x)$ graphed below, find: $\lim_{x \rightarrow 0} f(x) \cdot \cot(x)$

