

Section 1.4 HW

Please give complete, well written solutions to the following exercises.

1. If

$$\lim_{x \rightarrow a} (f + g) = 2 \text{ and}$$

$$\lim_{x \rightarrow a} (f - g) = 1$$

Find

$$\lim_{x \rightarrow a} fg$$

2. Find all values of a so that

$$\lim_{x \rightarrow 0} \frac{\sqrt{ax + 4} - 2}{x} = 1.$$

3. Compute

$$\lim_{x \rightarrow 0} \frac{|2x - 1| - |2x + 1|}{x}.$$

Hint: As $x \rightarrow 0$, will $2x - 1$ be positive or negative?

4. Problem 36 Section 1.4

5. Problem 54 Section 1.4

6. Show that

$$\lim_{\theta \rightarrow 0} \frac{\cos \theta - 1}{\theta} = 0.$$

(Hint: You will need to use the result: $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 0$.)