

# Math 2143 - Brief Calculus with Applications

Quiz #21 - 2014.11.14

Solutions

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1. Compute the following limit:

$$\lim_{t \rightarrow -2} \frac{2t + 4}{12 - 3t^2}$$

$$\begin{aligned} \lim_{t \rightarrow -2} \frac{2t + 4}{12 - 3t^2} &= \lim_{t \rightarrow -2} -\frac{2}{3} \cdot \frac{t + 2}{t^2 - 4} \\ &= -\frac{2}{3} \lim_{t \rightarrow -2} \frac{t + 2}{t + 2} \cdot \frac{1}{t - 2} \\ &= -\frac{2}{3} \cdot \frac{1}{-4} \\ &= \frac{1}{6} \end{aligned}$$

2. Compute the following limit:

$$\lim_{x \rightarrow 16} \frac{\sqrt{x} - 4}{x - 16}$$

$$\begin{aligned} \lim_{x \rightarrow 16} \frac{\sqrt{x} - 4}{x - 16} &= \lim_{x \rightarrow 16} \frac{\sqrt{x} - 4}{(\sqrt{x} - 4)(\sqrt{x} + 4)} \\ &= \lim_{x \rightarrow 16} \frac{\sqrt{x} - 4}{\sqrt{x} - 4} \cdot \frac{1}{\sqrt{x} + 4} \\ &= \frac{1}{8} \end{aligned}$$