

**Quiz 3 solutions—version A**

Name \_\_\_\_\_

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1. Evaluate

$$\lim_{x \rightarrow \infty} \frac{2 - x^2}{3x^2 - 4x + 8},$$

and give the equation of a line which is a horizontal asymptote to the graph of the function

$$f(x) = \frac{2 - x^2}{3x^2 - 4x + 8}.$$

$$\lim_{x \rightarrow \infty} \frac{2 - x^2}{3x^2 - 4x + 8} = -1/3.$$

A horizontal asymptote is  $y = -1/3$ .

2. For the function

$$f(x) = \frac{2x}{x - 3}$$

find the derivative  $f'(x)$ , and specify the domains of  $f$  and  $f'$ .The derivative is  $f'(x) = -6/(x - 3)^2$ . Both  $f$  and  $f'$  have domain  $\{x | x \neq 3\}$ .