

# Math 170: Quiz 6 Solution

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**Problem 1.** Find the vertical asymptotes of the function

$$f(x) = \frac{x^2 - 6x + 7}{x^2 - 49}.$$

*Solution.* Setting denominator to 0, we get  $x = \pm 7$  as the two roots. Observe that evaluating the numerator:

- At  $x = 7$ :  $49 - 42 + 7 = 14 \neq 0$ ,
- At  $x = -7$ :  $49 + 42 + 7 = 98 \neq 0$ ,

Therefore  $x = 7$  and  $x = -7$  are both vertical asymptotes of  $f(x)$ .

*Rubric.*

- +2pts for setting denominator to 0 or factorizing denominator
- +2pts for noting that the function evaluates to something nonzero/0 at  $x = 7$  and  $x = -7$
- +1pt for correct answer ( $x = 7$  and  $x = -7$  are both asymptotes)