

Name: Key
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 MAC 1105.1A26
 Cyr

Quiz 2

You must show all work to receive full credit!!

Problem 1. (2 pts) Find the following product: $\frac{x^2 + 14x + 49}{8x^3 - 4x^2} \cdot \frac{6x^2 + 7x - 5}{x^2 - 49}$

$$\frac{(x+7)^2}{4x^2(2x-1)} \cdot \frac{(3x+5)(2x-1)}{(x-7)(x+7)}$$

$$= \boxed{\frac{(x+7)(3x+5)}{4x^2(x-7)}}$$

$$\begin{array}{r} -30 \\ 10 \times -3 \\ \hline 7 \end{array}$$

$$\begin{aligned} &(6x^2 - 3x) + (10x - 5) \\ &3x(2x-1) + 5(2x-1) \\ &(3x+5)(2x-1) \end{aligned}$$

Problem 2. (1 pt) Find the quotient using synthetic division: $\frac{x^5 - 3x^4 - 9x^3 - 22x + 8}{x - 5}$

$$\begin{array}{r|rrrrrr} 5 & ⑤ & ④ & ③ & ② & ① & ⑥ \\ & 1 & -3 & -9 & 0 & -22 & 8 \\ (+) & 0 & 5 & 10 & 5 & 25 & 15 \\ \hline & 1 & 2 & 1 & 5 & 3 & 23 \\ & ④ & ③ & ② & ① & ⑥ & \end{array}$$

$$\Rightarrow \boxed{x^4 + 2x^3 + x^2 + 5x + 3 + \frac{23}{x-5}}$$

Problem 3. (2 pts) Find the sum: $\frac{15x+4}{6(x-3)(x+1)} + \frac{7x-4}{12(x-3)}$

LCD: $12(x-3)(x+1)$, so

$$\begin{aligned} &\frac{15x+4}{6(x-3)(x+1)} \cdot \frac{2}{2} + \frac{7x-4}{12(x-3)} \cdot \frac{x+1}{x+1} = \frac{30x+8 + 7x^2+3x-4}{12(x-3)(x+1)} \\ &= \boxed{\frac{7x^2 + 33x + 4}{12(x-3)(x+1)}} \end{aligned}$$