EXAM 3 - MATH 102 Friday, March 24

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Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Perform the operations and write your answer in lowest terms:

   (a) $\dfrac{2x^2-5x-12}{4x+6} \div \dfrac{x^2-16}{2} =$

   (b) $\dfrac{x+1}{x^2+3x} - \dfrac{1}{x-3} + \dfrac{1}{x^2-9} =$

2. (a) Simplify the complex fraction

$$\frac{\dfrac{x-1}{x+2}-\dfrac{x-2}{x+3}}{\dfrac{x-3}{x+3}+\dfrac{x+1}{x+2}}=$$

(b) Perform the division and the write your answer in the appropriate form: $(3x^3 - 5x^2 + 19x) \div (3x + 1)$.

3. Solve the equation

$$\frac{5}{x}-\frac{4}{x+2}=\frac{1}{5}+\frac{1}{5x}.$$

4. This morning, Abby ran 5 miles and then walked for 1 mile. She runs 6 mph faster than she walks. If her total time was 45 mins (= 3/4 hours), how fast did she run?

5. Perform the operations and simplify (leave no negative exponents):

   (a) $\sqrt[3]{54a^7b^5} =$

   (b) $(-8)^{-4/3} =$

   (c) $\left(\dfrac{a^{-1/2}}{b^{-1/4}}\right)^{-4} =$

   (d) $2\sqrt{45} - 3\sqrt{20} =$