King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (181)
Recitation P.7

Question 1: Simplify the following rational expressions

(a): $\frac{2}{4+x}+\frac{16}{x^2-16}+\frac{6}{4-x}$ **(b):** $\frac{4}{2-x}+\frac{5}{x^2+2x+4}\div\frac{x^2-4x+4}{x^3-8}$

Answer: (a): $\frac{-4}{x-4}$ **(b):** $\frac{1}{x-2}$

Question 2: Simplify

(a): $\frac{x^{-1}+(x+2)^{-1}}{x^{-1}-(x+2)^{-1}}$ **(b):** $1+\frac{1}{1+\frac{1}{1+x}}$

Answer: (a): $x+1$ **Answer: (b):** $\frac{2x+3}{x+2}$

Question 3: The expression $\frac{\frac{2x^2-3x-2}{x^2-1}}{\frac{2x^2+5x+2}{x^2+x-2}}$ simplifies to

(a) $\frac{x+1}{x-2}$ (b) $\frac{x-2}{x+1}$ (c) $\frac{2x+1}{x+2}$ (d) $\frac{x+2}{2x+1}$ (e) $\frac{x+2}{x-1}$

Answer: (b)

Question 4: Simplify the following expression:

Answer: $\frac{1}{(1-x^2)^{3/2}}=\frac{(1-x^2)^{\frac{1}{2}}}{(1-x^2)^2}$

Question 5: Rationalize the denominator of $\frac{2x-2y}{\sqrt{x}-\sqrt{y}}$

Answer: $2\left(\sqrt{x}+\sqrt{y}\right)$

Question 6: Find the domain of **(a):** $\frac{\sqrt{x}}{x^2-3x-4}$ **(b):** $\frac{x^2-1}{x^2-x-2}$

Answer:

(a): $Domain=\{x\,|\,x\geq 0\ ,\ x\neq 4\}=[0,4)\cup(4,\infty)$

(b): $Domain=\{x\,|\,x\neq -1 \text{ and } x\neq 2\}=(-\infty,-1)\cup(-1,2)\cup(2,\infty)$