

King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (141)
Recitation R.5

Question 1: Simplify the following:

$$(a) \frac{x}{x^2 + 3x + 2} + \frac{3x - 3}{x^2 - 1}$$

$$(b) \frac{x}{x + 5} + \frac{x}{x - 4} \div \frac{x + 2}{x^2 - x - 12}$$

Answer:

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

$$(b): \frac{x(x^2 + 9x + 17)}{(x + 5)(x + 2)}$$

Question 2:

$$(a) \frac{\frac{x^2}{x - 4} + 2}{\frac{2x - 2}{x} - 1}$$

$$(b) 2 + \frac{1}{2 + \frac{1}{1 + \frac{1}{x}}}$$

Answer: (a): $\frac{x(x + 4)}{x - 4}$

(b): $\frac{7x + 5}{3x + 2}$

Question 3:

The expression $\left(1 - \frac{4xy}{x^2 + 2xy + y^2}\right) \div \left(1 + \frac{4xy}{x^2 - 2xy + y^2}\right)$ simplifies to

(a) 1 (b) $x - y$ (c) $\left(\frac{x - y}{x + y}\right)^4$

(d) $x + y$ (e) $\left(\frac{x + y}{x - y}\right)^4$

Answer: (c): $\frac{(x - y)^4}{(x + y)^4}$

Question 4: The expression $-100^{1/2} + \left(\frac{27}{8}\right)^{-2/3} + (0.2)^{2/3} \cdot (40)^{2/3}$

- a) is not a real number
- b) simplifies to $-\frac{50}{9}$
- c) simplifies to $-\frac{9}{2}$
- d) simplifies to 0
- e) simplifies to 4

Answer: (b): simplifies to $-\frac{50}{9}$