

A.APR.D.6: Rational Expressions 2

1 If $x \neq 0$, the expression $\frac{x^2 + 2x}{x}$ is equivalent to

- 1) $x + 2$
- 2) 2
- 3) $3x$
- 4) 4

2 For all values of x for which the expression is defined, $\frac{2x + x^2}{x^2 + 5x + 6}$ is equivalent to

- 1) $\frac{1}{x + 3}$
- 2) $\frac{x}{x + 3}$
- 3) $\frac{1}{x + 2}$
- 4) $\frac{x}{x + 2}$

3 Which expression is in simplest form?

- 1) $\frac{x}{x^2}$
- 2) $\frac{9}{x^2 + 9}$
- 3) $\frac{x^2 - 4}{x + 2}$
- 4) $\frac{x^2 - 6x + 9}{x^2 - x - 6}$

4 Simplify: $\frac{x^2 + 6x + 5}{x^2 - 25}$

5 Express in simplest form: $\frac{x^2 - 5x - 24}{x^2 - 8x}$

6 Express $\frac{x^2 + 3x - 10}{x^2 + 5x}$ as a fraction in simplest form.

7 Express the following rational expression in simplest form: $\frac{9 - x^2}{10x^2 - 28x - 6}$

8 Simplify: $\frac{9x^2 - 15xy}{9x^2 - 25y^2}$

9 The fraction $\frac{3 - x}{2x - 6}$, $x \neq 3$, is equivalent to

- 1) $\frac{1}{2}$
- 2) $-\frac{1}{2}$
- 3) $\frac{1}{4}$
- 4) $-\frac{1}{4}$

10 Written in simplest form, the expression $\frac{x^2y^2 - 9}{3 - xy}$

is equivalent to

- 1) -1
- 2) $\frac{1}{3 + xy}$
- 3) $-(3 + xy)$
- 4) $3 + xy$

13 Written in simplest form, the expression $\frac{x^2y - 4}{4 - x^2y}$ is

- 1) 1
- 2) 0
- 3) $\frac{x^2y - 4}{4 - x^2y}$
- 4) -1

11 Written in simplest form, the expression $\frac{x^2 - 9x}{45x - 5x^2}$

is equivalent to

- 1) $\frac{1}{5}$
- 2) $-\frac{1}{5}$
- 3) 5
- 4) -5

14 The expression $\frac{3y^2 - 12y}{4y^2 - y^3}$ is equivalent to

- 1) $\frac{3}{y}$
- 2) $-\frac{3}{y}$
- 3) $-\frac{9}{4}$
- 4) $\frac{3}{4} - \frac{12}{y^2}$

12 Which expression is equivalent to $\frac{y - x}{x^2 - y^2}$?

- 1) $\frac{1}{x - y}$
- 2) $\frac{-1}{x - y}$
- 3) $\frac{1}{x + y}$
- 4) $\frac{-1}{x + y}$

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Answer Section

1 ANS: 1

$$\frac{x^2 + 2x}{x} = x + 2$$

REF: 010109a

2 ANS: 2

$$\frac{x(x+2)}{(x+3)(x+2)} = \frac{x}{x+3}$$

REF: 060202b

3 ANS: 2

$$\frac{x}{x^2} = \frac{1}{x}, \quad \frac{x^2 - 4}{x + 2} = \frac{(x+2)(x-2)}{x+2} = x - 2, \quad \frac{x^2 - 6x + 9}{x^2 - x - 6} = \frac{(x-3)(x-3)}{(x-3)(x+2)} = \frac{x-3}{x+2}$$

REF: 060712b

4 ANS:

$$\frac{x+1}{x-5} \cdot \frac{(x+5)(x+1)}{(x+5)(x-5)} = \frac{x+1}{x-5}$$

REF: 010631a

5 ANS:

$$\frac{x+3}{x} \cdot \frac{x^2 - 5x - 24}{x^2 - 8x} = \frac{(x-8)(x+3)}{x(x-8)} = \frac{x+3}{x}$$

REF: 060837a

6 ANS:

$$\frac{x-2}{x}$$

REF: 088704siii

7 ANS:

$$\frac{-x-3}{10x+2} \cdot \frac{(3+x)(3-x)}{(x-3)(10x+2)} = \frac{-1(3+x)(x-3)}{(x-3)(10x+2)} = \frac{-x-3}{10x+2}$$

REF: 060325b

8 ANS:

$$\frac{3x}{3x+5y}$$

REF: 069924a

9 ANS: 2

REF: 060118siii

10 ANS: 3

$$\frac{(xy+3)(xy-3)}{-1(xy-3)} = -(3+xy)$$

REF: 080305b

11 ANS: 2

$$\frac{x(x-9)}{5x(9-x)} = \frac{-1(9-x)}{5(9-x)} = -\frac{1}{5}$$

REF: 060504b

12 ANS: 4

REF: 011013b

13 ANS: 4

REF: fall9911b

14 ANS: 2

$$\frac{3y^2-12y}{4y^2-y^3} = \frac{3y(y-4)}{y^2(4-y)} = \frac{-3y(4-y)}{y^2(4-y)} = -\frac{3}{y}$$

REF: 080619b