

1. Simplify the rational expression $\frac{x^2 - 36}{x^2 + 6x}$.

a) $\frac{x - 6}{x}$

b) $-\frac{6}{x}$

c) $\frac{x - 6}{x + 1}$

d) $\frac{6}{x}$

e) $\frac{x + 6}{x}$

2. Simplify the rational expression $\frac{xy + ay + nx + an}{xy + ay + px + ap}$.

a) $\frac{n}{p}$

b) $\frac{n + y}{p + y}$

c) $\frac{n - y}{p - y}$

d) $\frac{n + y}{p - y}$

e) $\frac{p}{n}$

3. Simplify $\frac{8x^8y^8}{9x^9y^7} \cdot \frac{99x^8}{16}$.

a) $\frac{11yx^7}{2}$

b) $\frac{2xy^7}{11}$

c) $\frac{11yx^8}{2}$

d) $\frac{11yx^9}{2}$

e) $\frac{2xy^8}{11}$

4. Simplify $\frac{4t^5 - 32t^4}{t^3 - 3t^2} \cdot \frac{t^2 - 6t + 9}{t^5 - 64t^3}$.

a) $\frac{t - 3}{t(t + 8)}$

b) $\frac{4t - 12}{t(t + 8)}$

c) $\frac{4t^2 + 12}{t(t + 8)}$

d) $\frac{4t - 3}{t(t + 4)}$

e) $\frac{4}{t(t + 8)}$

5. Simplify $\frac{5}{8x^2y} - \frac{2x}{4y^2}$.

a) $\frac{5 - 4x^3}{8x^2y^2}$

b) $\frac{5y - 4x^2}{8x^2y^2}$

c) $\frac{5y - 4x}{8x^2y^2}$

d) $\frac{5y - 4x^3}{8x^2y^2}$

e) $\frac{5y - 4x^3}{8x^2y}$

6. Simplify $\frac{3}{7x - 1} - \frac{1}{2x + 3}$.

a) $\frac{-x + 10}{(7x - 1)(2x + 3)}$

b) $\frac{-x + 10}{(7x + 1)(2x - 3)}$

c) $\frac{-x + 10}{(7x - 1)(2x + 3)}$

d) $\frac{x + 10}{(7x - 1)(2x + 3)}$

e) $\frac{x - 10}{(7x - 1)(2x + 3)}$

7. Simplify $\frac{30}{x^2 + 2x - 3} - \frac{3}{x - 1} - \frac{2}{x + 3}$.

a) $\frac{5x + 23}{(x - 1)(x + 3)}$

b) $\frac{-5x + 23}{(x + 1)(x - 3)}$

c) $\frac{5x + 23}{(x + 1)(x - 3)}$

d) $\frac{-5x - 23}{(x + 1)(x - 3)}$

e) $\frac{-5x - 23}{(x + 1)(x + 3)}$

8. Simplify the complex fraction $\frac{\frac{7}{x} - \frac{9}{y}}{\frac{5}{y} - \frac{2}{xy}}$.

a) $\frac{7x - 9y}{5 - 2x}$

b) $\frac{x - 5y}{xy}$

c) $\frac{7y - 9x}{5x - 2}$

d) $\frac{x - 9y}{5x - 2}$

e) $\frac{x - 5y}{xy^2}$

9. Solve the equation $n - \frac{2}{n} = \frac{7}{3}$.

- a) $\left\{-\frac{4}{3}, 3\right\}$
- b) $\{3\}$
- c) $\left\{-\frac{4}{3}\right\}$
- d) $\left\{-\frac{2}{3}\right\}$
- e) $\left\{-\frac{2}{3}, 3\right\}$

13. Solve the equation $y = \frac{3}{4}x + \frac{5}{4}$ for the variable x .

- a) $x = \frac{4}{3}y - \frac{5}{4}$
- b) $x = -\frac{4}{3}y + \frac{5}{3}$
- c) $x = \frac{4}{3}y + \frac{5}{3}$
- d) $x = \frac{4}{3}y + \frac{5}{4}$
- e) $x = \frac{4}{3}y - \frac{5}{3}$

10. A sum of \$1800 is to be divided between two people in the ratio of 4 to 5. How much does each person receive?

- a) \$600 and \$1200
- b) \$800 and \$1000
- c) \$500 and \$1300
- d) \$900 and \$900
- e) \$700 and \$1100

11. The sum of two numbers is 14. If the larger number is three more than ten times the smaller number, find the difference between these two numbers.

- a) 14
- b) 8
- c) 2
- d) 12
- e) 6

12. Solve the equation $3 + \frac{15}{t-9} = \frac{15}{t(t-9)}$.

- a) $\{-5, 1\}$
- b) $\{5\}$
- c) $\{6, -1\}$
- d) $\{-1\}$
- e) $\{5, -1\}$

14. Sanchez can do a certain job in 3 hours, whereas it takes Barry 4 hours to do the same job. How long would it take them to do the job working together?

- a) 7 hours
- b) $\frac{7}{12}$ hours
- c) $1\frac{5}{7}$ hours
- d) $1\frac{7}{12}$ hours
- e) 1 hour

15. Simplify the numerical expression $(2^3 \cdot 3^{-2})^{-1}$.

- a) $\frac{1}{3}$
- b) $\frac{8}{9}$
- c) $\frac{9}{8}$
- d) $\frac{1}{6}$
- e) $\frac{3}{2}$

16. Simplify the expression $\left(\frac{x^{-1}}{y^{-3}}\right)^{-2}$. Express final results without using zero or negative integers as exponents.

- a) $\frac{x^3}{y^6}$
- b) $\frac{x^3}{y^5}$
- c) $\frac{y^6}{x^2}$
- d) $\frac{y^5}{x^3}$
- e) $\frac{x^2}{y^6}$

17. Find the indicated quotient. Express the final result using only positive integer exponents.

$$\left(\frac{30x^{-3}y^{-4}}{5x^6y^9}\right)^{-2}$$

a) $\frac{1}{36x^{18} - y^{26}}$

b) $36x^3y^5$

c) $\frac{x^{18}y^{26}}{36}$

d) $\frac{36}{x^{18}y^{26}}$

e) $36x^{18}y^{10}$

18. Evaluate $\sqrt[3]{-512}$.

a) -23

b) 45.25

c) -8

d) 8

e) 23

19. Change the radical $\frac{25\sqrt{500}}{-15\sqrt{15}}$ to simplest radical form.

a) $-\frac{\sqrt{15}}{9}$

b) $50\sqrt{3}$

c) $-\frac{5}{3}\frac{\sqrt{100}}{\sqrt{3}}$

d) $-\frac{50}{9}\sqrt{3}$

e) $\sqrt{500}$

20. Change the radical $-5\sqrt[3]{54}$ to simplest radical form.

a) $-5\sqrt[3]{2}$

b) $-15\sqrt[3]{2}$

c) $5\sqrt[3]{2}$

d) 15

e) $10\sqrt[3]{3}$

FALL 06 MATH 021 EXAM 1

ITEM NO. FORM: A

1	A
2	B
3	A
4	B
5	D
6	
7	
8	C
9	E
10	B
11	D
12	E
13	E
14	C
15	C
16	E
17	C
18	C
19	D
20	B