

Exam

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

1) Simplify: $(x^4y^3)^5$ 1) _____

2) Simplify and express your answer in terms of positive exponents: $\frac{(a^{5/3}b^{3/4})^5}{(a^{7/3})^4}$ 2) _____

3) Simplify: $7(x - y) - 4(y - x)$ 3) _____

4) Simplify: $3(x - 7) - 4(x^2 - x) + 2(1 - x)$ 4) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

5) Simplify: $(x + y + z) - (x + 3y - 7z) - (-3x - y + 8z)$ 5) _____
A) $y - 3z$
B) $3x - y$
C) $-x + 3y + 2z$
D) $y - 3x$
E) $-x + 2z$

6) $(x + 6)(x - 2) =$ 6) _____
A) $x^2 + 8x - 12$
B) $x^2 + 4x - 12$
C) $x^2 + 8x + 12$
D) $x^2 - 4x - 12$
E) $x^2 - 8x - 12$

7) $\frac{x^3 + 4x^2 - 12x}{4x}$ 7) _____
A) $5x^2 - 12x$
B) $\frac{x^2}{4} + x - 3$
C) $\frac{x^2}{4} - 4x^2 - 12x$
D) $x^3 - 11x$
E) $x^3 + 4x^2 - 3$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

8) Completely factor: $3ax + 9ay$ 8) _____

- 9) Completely factor: $x^{7/5}y^3 - 35x^{2/5}y^4$ 9) _____
- 10) Completely factor: $4xy^3 + 6xy^2 - 2xy^4$ 10) _____
- 11) Completely factor: $x^2 - 36$ 11) _____
- 12) Completely factor: $x^2 + 4x + 3$ 12) _____
- 13) Completely factor: $x^2 - 10x + 16$ 13) _____
- 14) Completely factor: $4y^2 - 25$ 14) _____
- 15) Completely factor: $x^2 + 6x + 9$ 15) _____
- 16) Completely factor: $x^2 + x - 12$ 16) _____
- 17) Completely factor: $4x^2 + 5x - 6$ 17) _____
- 18) Completely factor: $3x^4 + 6x^3 + 3x^2$ 18) _____
- 19) Completely factor: $(x + 3)^2(x - 5)^3 - (x + 3)(x - 5)^4$ 19) _____
- 20) Completely factor: $2t^2 + 8t + 6$ 20) _____
- 21) Completely factor: $x^2y + 11xy^2$ 21) _____
- 22) Completely factor: $x^{-2} + 8x^{-1} - 20$ 22) _____
- 23) Perform the operation and simplify your answer: $\frac{x+7}{x} \cdot \frac{6}{3x+21}$ 23) _____
- 24) Perform the operation and simplify your answer: $\frac{z^2-4}{z^2+2z} \cdot \frac{z^2}{z-2}$ 24) _____
- 25) Perform the operation and simplify your answer: $\frac{3-x}{x^2-x-2} \cdot \frac{x+1}{2x-6}$ 25) _____
- 26) Perform the operation and simplify your answer: $\frac{x^2-3x+2}{x^2-7x+12} \cdot \frac{x^2-x-6}{x^2+x-2}$ 26) _____

27)

Perform the operation and simplify your answer: $\frac{\frac{2}{9x}}{\frac{3y}{4}}$

27) _____

28)

Perform the operation and simplify your answer: $\frac{\frac{2x - 2y}{3z}}{\frac{x - y}{6z^3}}$

28) _____

29)

Perform the operation and simplify your answer: $\frac{\frac{x}{x^2 - 4}}{\frac{2}{(x + 2)^2}}$

29) _____

30) Perform the operation and simplify your answer: $\frac{2x - 2}{x^2 - 2x - 8} \div \frac{x^2 - 1}{x^2 - 5x + 4}$

30) _____

31) Perform the operation and simplify your answer: $\frac{4}{2x - 1} + \frac{x}{x + 3}$

31) _____

32) Perform the operation and simplify your answer: $\frac{5 - x}{5} - 1$

32) _____

33) Perform the operation and simplify your answer: $\frac{x + 4}{x^2 + 2x + 1} + \frac{x - 2}{x^2 + 5x + 4}$

33) _____

34)

Perform the operation and simplify your answer: $\frac{\frac{a}{b} + \frac{b}{a}}{\frac{a}{b} - \frac{b}{a}}$

34) _____

35) Rationalize the denominator: $\frac{\sqrt{3}}{\sqrt{5} + \sqrt{3}}$

35) _____

36) Rationalize the denominator: $\frac{1}{3 - \sqrt{2}}$

36) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

37) $\frac{x^2 - x - 6}{x^2 + 8x + 16} \div \frac{x^2 - 9}{x^2 - x - 20} =$ 37) _____

A) $\frac{(x + 2)(x - 5)}{(x + 4)(x + 3)}$

B) $\frac{(x + 2)(x - 3)}{(x - 5)(x + 4)}$

C) $\frac{(x - 2)(x - 5)}{(x + 4)(x - 3)}$

D) $\frac{(x + 2)(x + 3)(x - 3)^2}{(x - 5)(x + 4)^3}$

E) $\frac{(x - 2)(x + 5)}{(x + 4)(x - 3)}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

38) Simplify: $\frac{2x^2 - 2}{x^3 - x^2}$ 38) _____

39) Divide and simplify: $\frac{x + \frac{1}{y}}{x - \frac{1}{y}}$ 39) _____

40) Simplify: $\frac{2x^2 + 3}{\sqrt{x^2 + 1}} + \sqrt{x^2 + 1}$ 40) _____

41) Rationalize the denominator and simplify: $\frac{2 + \sqrt{x}}{2 - \sqrt{x}}$ 41) _____

42) Simplify: $\frac{x}{2x + 2} + \frac{5}{x} + \frac{3x}{2x^2 + 2x}$ 42) _____

Answer Key

Testname: UNTITLED1

- 1) $x^{20}y^{15}$
- 2) $\frac{b^{15/4}}{a}$
- 3) $11x - 11y$
- 4) $-4x^2 + 5x - 19$
- 5) B
- 6) B
- 7) B
- 8) $3a(x + 3y)$
- 9) $x^{2/5}y^3(x - 35y)$
- 10) $2xy^2(2y + 3 - y^2)$
- 11) $(x + 6)(x - 6)$
- 12) $(x + 1)(x + 3)$
- 13) $(x - 2)(x - 8)$
- 14) $(2y + 5)(2y - 5)$
- 15) $(x + 3)^2$
- 16) $(x + 4)(x - 3)$
- 17) $(4x - 3)(x + 2)$
- 18) $3x^2(x + 1)^2$
- 19) $8(x + 3)(x - 5)^3$
- 20) $2(t + 3)(t + 1)$
- 21) $xy(x + 11y)$
- 22) $(x^{-1} + 10)(x^{-1} - 2)$
- 23) $\frac{2}{x}$
- 24) z
- 25) $-\frac{1}{2(x - 2)}$
- 26) $\frac{x - 2}{x - 4}$
- 27) $\frac{8}{27xy}$
- 28) $4z^2$
- 29) $\frac{x(x + 2)}{2(x - 2)}$
- 30) $\frac{2(x - 1)}{(x + 2)(x + 1)}$
- 31) $\frac{2x^2 + 3x + 12}{(2x - 1)(x + 3)}$
- 32) $-\frac{x}{5}$
- 33) $\frac{2x^2 + 7x + 14}{(x + 1)^2(x + 4)}$
- 34) $\frac{a^2 + b^2}{a^2 - b^2}$

Answer Key

Testname: UNTITLED1

$$35) \frac{\sqrt{15} - 3}{2}$$

$$36) \frac{3 + \sqrt{2}}{7}$$

37) A

$$38) \frac{2(x + 1)}{x^2}$$

$$39) \frac{xy + 1}{xy - 1}$$

$$40) \frac{3x^2 + 4}{\sqrt{x^2 + 1}}$$

$$41) \frac{4 + 4\sqrt{x} + x}{4 - x}$$

$$42) \frac{x^2 + 13x + 10}{2x^2 + 2x}$$