

1. Evaluate.

$$\left(\frac{1}{2}\right) \left| -6 + (4)(-2) \right|.$$

- A. 2
- B. -7
- C. 7
- D. -2
- E. None of the above

2. Simplify. Do not leave negative exponents in your answer.

$$\left(x^4\right)^3 \left(\frac{-3}{x^{-2}}\right)^{-3}$$

- A. $-\frac{x^6}{27}$
- B. $-\frac{x^2}{27}$
- C. $\frac{x^2}{9}$
- D. $9x^6$
- E. None of the above

3. Simplify. Do not leave negative exponents in your answer.

$$\left(\frac{4x^{-5}y^8}{x^{-2}y^3}\right) \left(\frac{x^2y^{-1}}{20}\right)$$

- A. $\frac{4y^4}{x^5}$
- B. $\frac{x}{5y^4}$
- C. $\frac{x^5y}{5}$
- D. $\frac{y^4}{5x}$
- E. $\frac{y^5}{4x}$

4. Rationalize the denominator and simplify.

$$\sqrt{\frac{1}{8x^4y}}$$

A. $\frac{\sqrt{y}}{4xy}$

B. $\frac{1}{8x^4y}$

C. $\frac{1}{4x^2y}$

D. $\frac{\sqrt{2y}}{8x^4y}$

E. $\frac{\sqrt{2y}}{4x^2y}$

5. Multiply and simplify.

$$(4x - 3y)^2$$

A. $16x^2 - 24xy + 9y^2$

B. $16x^2 + 9y^2$

C. $16x^2 - 12xy + 9y^2$

D. $16x^2 - 9y^2$

E. None of the above

6. Factor $x^6 + 27$ given that $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$.

A. $(x^2 + 3)(x^6 - 3x^3 + 9)$

B. $(x^2 + 3)(x^4 - 3x^2 + 9)$

C. $(x + 3)^3$

D. $(x + 3)(x^2 - 3x + 9)$

E. $(x + 3)(x^3 + 3)$

7. Simplify completely.

$$\frac{2x^2 - 5x - 3}{x^2 - 9} \cdot \frac{5x^2 - 17x + 6}{10x^2 + x - 2}$$

- A. $\frac{1}{x+3}$
 B. $\frac{2}{2-5x}$
 C. $\frac{x-3}{x+3}$
 D. $\frac{(2x+1)^2}{(x+3)(x-3)}$
 E. $\frac{2-5x}{2}$

8. Simplify.

$$\frac{\frac{b-a}{a-b}}{\frac{b-a}{ab^3}}$$

- A. b^2
 B. $\frac{(b-a)^2}{a^2b^4}$
 C. $b^2(b-a)$
 D. $\frac{b+a}{ab}$
 E. $b^2(b+a)$

9. Solve the following equation.

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

- A. $x = -\frac{7}{2}$
 B. $x = \frac{1}{6}$
 C. $x = 2$
 D. $x = -\frac{12}{5}$
 E. None of the above

10. Solve the following equation. Choose the answer that best describes the solution. Be sure to check your answer(s).

$$\frac{5x}{x-2} + \frac{3}{x} + 2 = \frac{-6}{x(x-2)}$$

- A. There is one solution.
It is positive.
- B. There are two solutions.
One is zero and one is positive.
- C. There is one solution.
It is negative.
- D. There is no solution for x .
- E. There are two solutions.
One is positive and one is negative.

11. Solve $B = \frac{K+1}{K}$ for K .

- A. $K = B - 1$
- B. $K = \frac{1}{B}$
- C. $K = B$
- D. $K = \frac{1}{B-1}$
- E. Cannot be solved for K .

12. Solve for x . Simplify your answer.

$$x^2 - 6x - 11 = 0$$

- A. $x = 6 \pm 2\sqrt{5}$
- B. $x = 3 \pm 2\sqrt{5}$
- C. $x = 3 \pm 4\sqrt{5}$
- D. $x = 6 \pm 4\sqrt{5}$
- E. There are no real solutions.

13. A man plans to use 210 feet of fencing to enclose a rectangular region, using a river as one side where no fencing is needed (see the figure). If the length of the side parallel the river is three times the width of the adjacent side, find the width of the adjacent side.

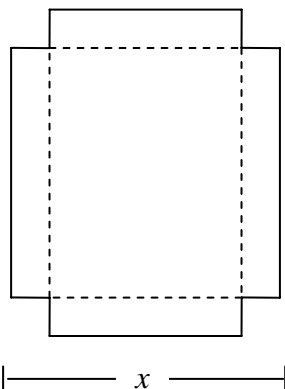


- A. 38 feet
 B. 26 feet
 C. 42 feet
 D. 8 feet
 E. None of the above

14. A chemist is to prepare 20 milliliters of a solution that contains 12% sulfuric acid. He has only containers with 8% sulfuric acid and 15% sulfuric acid available. How many milliliters of the container of 8% sulfuric acid should be used to prepare the solution?

- A. $\frac{240}{23} ml$
 B. $\frac{14}{3} ml$
 C. $\frac{40}{7} ml$
 D. $\frac{60}{7} ml$
 E. None of the above

15. A box with an open top is to be constructed by cutting 4-inch squares from the corners of a rectangular sheet of tin whose length is three times its width. If x represents the original width, choose the equation that would be used to solve for x if the volume of the resulting box is to be 120 cubic inches. DO NOT SOLVE. Simplify the equation.



- A. $3x^2 - 16x - 14 = 0$
 B. $3x^2 - 32x - 56 = 0$
 C. $3x^2 - 16x - 120 = 0$
 D. $3x^2 - 56x + 24 = 0$
 E. $3x^2 - 32x + 34 = 0$

Question #	Green Form Fall 2006	Answer
1	C	7
2	A	$-\frac{x^6}{27}$
3	D	$\frac{y^4}{5x}$
4	E	$\frac{\sqrt{2y}}{4x^2y}$
5	A	$16x^2 - 24xy + 9y^2$
6	B	$(x^2 + 3)(x^4 - 3x^2 + 9)$
7	C	$\frac{x-3}{x+3}$
8	E	$b^2(b+a)$
9	D	$x = -\frac{12}{5}$
10	A	There is one solution. It is positive. ($x=0$ is extraneous).
11	D	$K = \frac{1}{B-1}$
12	B	$x = 3 \pm 2\sqrt{5}$
13	C	42 feet
14	D	$\frac{60}{7}$ ml
15	E	$3x^2 - 32x + 34 = 0$