Intermediate Algebra Sample Test 1

Graph the solution of each inequality in a number line:

1. $x + 3(x - 7) > -25$

2. $-4 \leq 2(x + 1) < 10$

3. A student has test scores of 75%, 79% ,68%and 80%. What must they score on the fifth exam to have an average of at least 70%? Express the solution as an inequality.

Graph the following lines:

4. $-3x + 2y = 12$

5. $y = -4x + 1$

6. $x = 2$

Prove whether the given ordered pair is a solution of the given system of equations:

7. $(-2,1)$ $2x = y - 5$
$x + y = -1$

Solve each system by graphing **(Use the Intercept Method or Slope/Intercept Method)** :

8. $2x + y = -6$
$4x + 2y = 8$

9. $x - 2y = -1$
$2x + 3y = -9$

10. $y - 2x = 4$
$4x - 2y = -8$

Find each product:

11. $-3xy(xy^2 - x + y)$

12. $(3x - y)(2x + y)$

13. $(2y - 1)^2$

14. $(y^2 - 3)(y^2 + 3)$

15. $(2a - 3)(4a^2 + 6a + 9)$

Simplify:

16. $\dfrac{6x^2y^3z^5}{-16x^3y^2z^5}$

17. $\dfrac{6m^2 - 7mn + 2n^2}{-3m^2n^2}$

Use long division to simplify:

18. $2a + 3 \overline{)\, 6a^2 + 5a - 6}$

19. $3x + 1 \overline{)\, -13x - 4 + 9x^3}$

Solve the equation for y:

20. $4 + (2y - 3)(2y - 3) = (2y - 1)(2y + 3)$

Intermediate Algebra Sample Test 2

(2 pts) 1. Factor out the GCF: $3x^5y^4z^3 - 21x^5y^5z^4 - 9x^2y^3z^5$

(3 pts) 2. Factor out the GCF: $-5xy^2z^2 - 20x^3y^2z + 15x^2y^2z^2$

(4 pts) 3. Factor the four term polynomial by grouping: $2ac - 2bc + 3af - 3bf$

(3 points each) Problems 4 - 17 **COMPLETELY** Factor

4. $4y^2 - 81$
5. $18kc^2 - 8kd^2$
6. $x^2 + 6x + 9$
7. $x^2 - 11x - 12$
8. $C^2 + 2C - 15$
9. $z^2 - 16z + 64$
10. $a^2 - 3ab - 4b^2$
11. $6x^2 + 17x - 39$
12. $25y^2 - 40y + 16$
13. $2x^2 - 19x + 35$
14. $m^2 + 17mn + 70n^2$
15. $6t^2 - 5t + 1$
16. $5a^3 + 24a^2 - 5a$
17. $a^3 - 16a + 2a^2 - 32$

Problems 18 - 25 Solve each equation:

(5 pts) 18. $18x^2 + 8x = 0$

(5 pts) 19. $25y^2 - 16 = 0$

(5 pts) 20. $m^2 + 8m + 15 = 0$

(5 pts) 21. $x^2 - 9x + 18 = 0$

(5 pts) 22. $R^2 - 2R - 8 = 0$

(5 pts) 23. $3x^2 + 4x - 15 = 0$

(6 pts) 24. $4z + 4 = -z^2$

(6 pts) 25. $x^3 - 9x^2 + 14x = 0$

(7 pts) Solve **1** of the word problems :

26. A rectangle has a length that is 2 ft. longer than its width. If the area is 48 ft^2 , find its length and width.

27. If 6 is added to the square of an even number, the result is 24 less than 11 times that number. Find the integer.

28. An object is thrown into the air at 80 ft/sec.. If the height "h" of the object after "t" seconds of traveling is given by $h = 80t - 16t^2$, find out when this object hits the ground. (Remember: ground is h = 0)

Intermediate Algebra Sample Test 3

(4 pts each) Simplify the following problems:

1. $\dfrac{4f^2k^5h^4}{12f^6k^2h^4}$

2. $\dfrac{x^2 - 10x + 25}{x^2 - 3x - 10}$

3. $\dfrac{t^2 - 16}{t^2 + t - 12} \cdot \dfrac{t - 3}{t - 4}$

4. $\dfrac{x^2 - 49}{x + 7} \div \dfrac{x - 7}{5x + 35}$

(5 pts each) Add or subtract as indicated:

5. $\dfrac{9x + 1}{x+2} + \dfrac{x + 5}{x+2}$

6. $\dfrac{a + 4}{a-9} - \dfrac{a + 3}{a-9}$

7. $\dfrac{x}{(x + 4)(x - 4)} + \dfrac{4}{x - 4}$

(7pts each) Solve the equations:

8. $\dfrac{x + 1}{2} - \dfrac{x - 1}{4} = -4$

9. $\dfrac{a + 1}{a + 4} = \dfrac{a - 7}{a - 2}$

10. $\dfrac{2x}{x + 9} + \dfrac{2x + 18}{x + 9} = 3$

Ratio Problems:

11. Express as a ratio in lowest terms: 6 feet to 3 yards.

12. Which is a better buy: \$0.89 cents for a 6 ounce jar of cinnamon, or \$1.19 for an 8 ounce jar of cinnamon?

Proportion problems:

13. Solve the proportion: $\frac{x+3}{-7} = \frac{5}{35}$

14. If there were 500 crimes committed in a town where the population is 100,000 then how many crimes would you expect if the population was 350,000?

15. Dan invested $20,000 and earned $900 in income in the first year. How much income would he have earned if he had invested $25,000?

16. Polly drove 315 miles in 7 hours. How long will it take her to drive 225 miles based on the same speed?

17. The triangles are similar. Find x.

Simplify the Complex Fractions:

18. $\dfrac{\frac{9xy}{18y^2}}{\frac{14x^2y^2}{2y}}$

19. $\dfrac{\frac{1}{z+3} + 2}{\frac{6}{z+3} - 9}$

20. $\dfrac{\frac{6}{w-5} - \frac{2}{w}}{\frac{3}{w} + \frac{2}{w-5}}$

Intermediate Algebra Sample Test 4

Give the best answer (**most simplified form**) to each problem. All problems worth 4 points

Evaluate the expressions:

1. $(125)^{2/3} =$

2. $\left(\frac{121}{36}\right)^{3/2} =$

3. $\frac{64^{2/3}}{9^{3/2}} =$

4. Simplify by first converting to radical form $(8x^9w^3)^{1/3}$

5. Distribute: $\frac{\sqrt{25y^6z^3}}{y^3}$

6. Simplify $(m^{1/2}p^{-3/2})^{-2/3}$

7. Distribute: $d^{2/5}(d^{3/5} + d^{2/5})$ (Leave answer with positive exponents only)

8. Write in exponent form **:** $\left(\sqrt[5]{4hjk}\right)^7$

Problems 9 - 14: Simplify

9. $\sqrt{72} + \sqrt{200}$

10. $\sqrt[3]{24} - \sqrt[3]{375}$

11. $\sqrt{50x^6y^5z^4}$

12. $\sqrt[3]{54x^2y^4z^6}$

13. $2\sqrt{75} - 3\sqrt{12} + \sqrt{108}$

14. $4\sqrt[3]{32} + 2\sqrt[3]{108}$

15. Simplify by distributing : $2\sqrt{5}\ (\ 2\sqrt{5} - 3\sqrt{3})$

16. Simplify by FOIL: $(7\sqrt{7} + 5)\ (1\sqrt{7} - 5)$

17. Find the distance between the points (0,-2) and (-9,12). Simplify your answer by pulling out any perfect squares.

18. Simplify by rationalizing the denominator: $\dfrac{5}{\sqrt{10}}$

19. Simplify by rationalizing the denominator: $\dfrac{6}{\sqrt{2x} + 3}$

20. Solve the x in the figure:

21. Solve for x in the figure:

22. Solve the equation: $\sqrt[3]{8m - 56} = 2$

23. Solve the equation. Isolate the radical first: $\sqrt{x - 4} - 2 = 0$

24. Solve the equation: $\sqrt{3c + 7} = \sqrt{c - 17}$

25. Solve the equation: $\sqrt[4]{12x + 124} = 4$