

In problems 1 & 2 assume  $A = \{1, 3, 4, 7, 8\}$  and  $B = \{3, 4, 5, 7\}$

3pts 1.  $\{3, 7\} \subset B$  TRUE or FALSE (circle one)

3pts 2. Find  $(A \cap B)$

3pts 3.  $40 \div 4 + 3 \times 5 =$  \_\_\_\_\_

3pts 4.  $-5^2 + 13 =$  \_\_\_\_\_

3pts 5.  $\frac{6^9}{6^7} =$  \_\_\_\_\_

3pts 6. Simplify using positive exponents  $\frac{-56x^9}{8x^{-5}}$

3pts 7. Write in exponential form:  $\sqrt[7]{x^3}$

3pts 8. Simplify  $(x^{4/5})(x^{16/5})$

4pts 9. Simplify  $\sqrt{3x^7y^5z^{-3}} \sqrt{12x^5y^{13}z^9}$

3pts 10. Rationalize the denominator  $\frac{9}{\sqrt{7x}}$

3pts 11. Perform the indicated operations and simplify  $(8x^8 + 9x^6 + 7x^3 - 5) - (4x^8 - 3x^5 - 2x^3 + 9x)$

3pts 12. Perform the indicated operations and simplify  $(7x^6)(5x^6 + 3x^5 - 3x^3 + 2x)$

4pts 13. Use long division to solve  $(x^3 + 6x^2 + 12x + 8) \div (x + 2)$

**In problems 14-16 factor completely (4pts each)**

14.  $x^3 + 27$

15.  $x^4 - 625$

16.  $20x^9y^6 + 60x^9y^5$

**In problems 17-19 perform the indicated operations and simplify (3pts each)**

17.  $\frac{15x^8y^{11}z^3}{5x^{-3}y^5z^4}$

18.  $\frac{x^2 - 64}{x + 5} \div \frac{x^2 + 9x + 8}{x^2 + 6x + 5}$

19.  $\frac{x - 12}{x^2 - 25} + \frac{3x - 8}{x^2 - 25}$

**In problems 20-21 solve for x (4pts each)**

20.  $\frac{3x}{7} + 2 = \frac{x + 18}{5}$

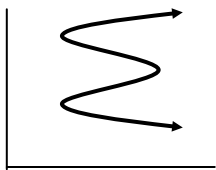
21.  $8x - 5 \geq 5x + 13$

5pts 22. Graph  $5x - 2y = 10$

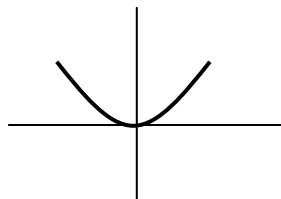
3pts 23. If  $F(x) = x^2 + 4x + 8$  find  $F(a)$

4pts 24. What is the domain of  $y = \frac{x - 1}{(x + 3)(x - 4)}$ ?

3pts 25. Is the following the graph of a function? why or why not?



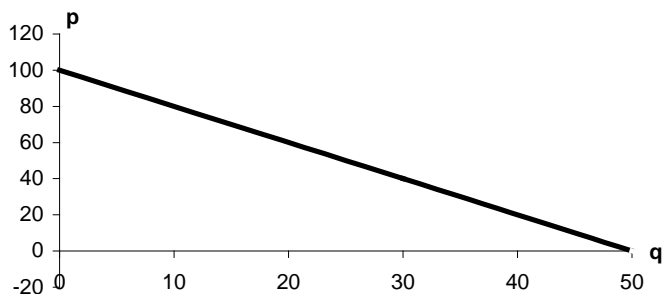
4pts 26.



The graph to the left is the graph of which of the following?

- a)  $x^3$    b)  $x^2$    c)  $x$    d)  $\frac{1}{x}$

3pts 27. Determine how many units  $q$  are demanded when the price is 10 in the graph below (mark the graph).



3pts 28. Find the slope of the line through (9, 2) and (13, 10)

3pts 29. Determine the slope and the y-intercept for  $y = 7x - 5$

3pts 30. Find the equation of the line through (8, 3) with slope -5.

Formulas

$$y - y_1 = m(x - x_1) \quad y = mx + b \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\sqrt[n]{x^m} = x^{m/n} \quad x^3 - a^3 = (x - a)(x^2 + ax + a^2)$$

$$x^3 + a^3 = (x + a)(x^2 - ax + a^2)$$