

## Algebra 2 P Chapter Practice Test

Name: \_\_\_\_\_

Please show your work. You are allowed only a basic calculator. This is last year's test.

1. Perform the indicated operations and simplify

a)  $(5x^2 - 7y)^2$

b)  $(2x + 7)(3x^2 - 8x + 1)$

2. Factor each expression completely

a)  $x^2 - 3x - 40$

b)  $2x^3 + x^2 - 6x - 3$

c)  $x^4 + 5x^3 + 6x^2$

d)  $2(a + b)^2 + 5(a + b) - 3$

3. a) Write  $-3 \leq x < 8$  in interval notation and graph it on a number line

b) If  $A = \{1 \leq x \leq 6\}$  and  $B = \{x > 4\}$ , express the following in any form you wish:

i)  $A \cup B =$

ii)  $A \cap B =$

c) (Extra Credit) If  $C \cap D = (5, 12]$ , give a possible set for  $C$  and  $D$

4. Simplify the expression completely

a)  $\frac{x}{x^2 + 10x + 21} - \frac{2}{x^2 - 2x - 15}$

b)  $\frac{4y^2 - 3y - 7}{16y^2 - 49} \div \frac{y^2 - 2y - 3}{4y^2 - 5y - 21}$

c) (Extra Credit)  $\frac{x^{-1} + y^{-1}}{(x + y)^{-1}}$

5. Evaluate the expression

a)  $\sqrt{80} + \sqrt{45}$

b)  $\sqrt[4]{81}$

c)  $\left(\frac{1}{8}\right)^{-2/3}$

6. Simplify the expression. Write the final answer without negative exponents

a)  $\sqrt[5]{a^7 b^{11}}$

b)  $(15x^6 y^8) \left(\frac{1}{5} x^2 y^2\right)$

c)  $\frac{(x^8 y^4)^5 (x^{-2} y^8)^{-3}}{x^{-4} y^{10}}$

d)  $(x^{-10} y^4 z^5)^{-2/7}$

7. Circle the letter of the correct answer in each part

a) The distance from  $p$  to  $c$  is 6

A.  $|p + c| = 6$     B.  $|p - c| = 6$     C.  $|p + 6| = c$     D.  $|p - 6| = c$

b)  $27x^3 - 125t^3$  factors into

A.  $(3x - 5t)(9s^2 + 15st + 25t^2)$     B.  $(3x + 5t)(9s^2 - 15st + 25t^2)$

C.  $(3x - 5t)(9s^2 + 16st + 25t^2)$     D.  $(3x + 5t)(9s^2 - 16st + 25t^2)$

c) This function has a domain of  $\{x \mid x \neq 2, x \neq -2\}$

A.  $\frac{x^2 - 4}{x^2 + 4}$     B.  $\frac{x^2 - 4}{x^2 - 2x + 2}$     C.  $\frac{x^2 - 2x + 2}{x^2 - 4}$     D.  $\frac{x + 2}{x - 2}$

d) Rationalize the denominator  $\frac{3}{4 + \sqrt{5}}$

A.  $\frac{12 + 3\sqrt{5}}{9}$     B.  $\frac{12 + 3\sqrt{5}}{11}$     C.  $\frac{12 - 3\sqrt{5}}{9}$     D.  $\frac{12 - 3\sqrt{5}}{11}$

Answers:

1. a)  $25x^4 - 70x^2y + 49y^2$     b)  $6x^3 + 5x^2 - 54x + 7$   
2. a)  $(x - 8)(x + 5)$     b)  $(x^2 - 3)(2x + 1)$     c)  $x^2(x + 3)(x + 2)$     d)  $(2(a + b) - 1)((a + b) + 3)$   
3. a)  $[-3, \infty)$ , graph it yourself    b) i)  $1 \leq x < \infty$     ii)  $4 < x \leq 6$     c) lots of answers possible  
4. a)  $\frac{x^2 - 7x - 14}{(x + 7)(x + 3)(x + 5)}$     b) 1    c)  $\frac{(x + y)^2}{xy}$   
5. a)  $7\sqrt{5}$     b) 3    c) 4  
6. a)  $ab^2\sqrt{a^2b}$     b)  $3x^8y^{10}$     c)  $\frac{x^{50}}{y^{14}}$     d)  $\frac{x^{20/7}}{y^{8/7}z^{10/7}}$   
7. a) B    b) A    c) C    d) D