

Preview Chapter Review

1. Consider the set:  $\{-17, -\frac{19}{13}, 0, 0.75, \sqrt{2}, \pi, \sqrt{81}\}$ . List all of the

a. Natural numbers  $\sqrt{81}$

b. Whole numbers  $\sqrt{81}, 0$

c. Integers  $\sqrt{81}, 0, -17$

d. Rational numbers  $\sqrt{81}, 0, -17, -\frac{19}{13}, 0.075$

e. Irrational numbers  $\sqrt{2}, \pi$

2. Rewrite each without absolute value bars.

a.  $|-103| = 103$

b.  $|\sqrt{2} - 1| = \sqrt{2} - 1$

c.  $|3 - \sqrt{17}| = \sqrt{17} - 3$

3. Express the distance between the numbers  $-154$  and  $287$  using absolute value. Then evaluate the absolute value.

$$|-154 - 287| = 441$$

4. Evaluate  $\frac{5}{9}(F - 32)$  for  $F = 68$ .  $20$

5. Simplify  $3(7x - 5y) - 2(4y - x + 1)$ .

$$23x - 23y - 2$$

6. Evaluate  $(-3)^3(-2)^2$ .  $-108$

7. Simplify.

a.  $(-2x^4y^3)^3 = -8x^{12}y^9$

b.  $(-5x^3y^2)(-2x^{-11}y^{-2}) = \frac{10}{x^8}$

c.  $(2x^3)^{-4} = \frac{1}{16x^{12}}$

d.  $\frac{7x^5y^6}{28x^{15}y^{-2}} = \frac{y^8}{4x^{10}}$

8. Write the following in scientific notation.

a.  $-0.000678 = -6.78 \times 10^{-4}$

b.  $386,000,000 = 3.86 \times 10^8$

9. Write the following in decimal notation.

a.  $4.5 \times 10^{-4} = 0.00045$

b.  $7.632 \times 10^3 = 7632$

10. Simplify.

a.  $\sqrt{12x^2} = 2|x|\sqrt{3}$

b.  $\sqrt{5x} \cdot \sqrt{10x^2} = 5|x|\sqrt{2x}$

c.  $\frac{\sqrt{96x^3}}{\sqrt{2x}}$  (Assume  $x > 0$ )  $= 4x\sqrt{3}$

11. Add  $2\sqrt{50} + 3\sqrt{8} = 16\sqrt{2}$

12. Rationalize the denominator.

a.  $\frac{30}{\sqrt{5}} = 6\sqrt{5}$

b.  $\frac{5}{6+\sqrt{3}} = \frac{30-5\sqrt{3}}{33}$

13. Evaluate.

a.  $\sqrt[5]{-32} = -2$

b.  $16^{\frac{1}{2}} = 4$

c.  $27^{\frac{-1}{3}} = \frac{1}{3}$

13. Subtract.  $(13x^4 - 8x^3 + 2x^2) - (5x^4 - 3x^3 + 2x^2 - 6) = 8x^4 - 5x^3 + 6$

14. Find each product.

a.  $(3x - 2)(4x^2 - 3x + 2) = 12x^3 - 17x^2 + 12x - 4$

b.  $(3x-4)^2 = 9x^2 - 24x + 16$

c.  $(x+7y)(3x-5y) = 3x^2 + 16xy - 35y^2$

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

15. Add.  $(7x^2 - 8xy + y^2) + (-8x^2 - 9xy - 4y^2) = -x^2 - 17xy - 3y^2$

16. Factor completely.

a.  $15x^3 - 3x^2 = 3x^2(5x-1)$

b.  $64 - x^2 = (8+x)(8-x)$

c.  $x^3 - 3x^2 - 9x + 27 = (x-3)^2(x+3)$

d.  $x^4 - 16 = (x^2+4)(x+2)(x-2)$

17. Rational Expressions on worksheet.