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MATH E-3: Assignment 2

What set(s) of numbers do the following belong to (real, rational, irrational, integers, whole, natural). Be sure to list all for full credit.

1. $-1/3$
   Real, Rational

2. -25
   Real, Rational, Integer, Whole

3. π
   Real, Irrational

4. $\sqrt{5}$
   Real, Irrational

5. Is 1/7 a natural number? Why or why not?
   No, because all natural numbers are whole numbers, and non-negative.

6. Is 2/3 a rational number? Why or why not?
   Yes, 2/3 is a rational number because it can be represented by a fraction where both the numerator and denominator are integers (i.e. 2 and 3).

Simplify if possible. If not, tell why you cannot:

7. $\sqrt{25}$

   5

8. $\sqrt[3]{-27}$

   -3

9. $\sqrt[2]{-36}$

   The square root of -36 is an imaginary number.

10. $\sqrt[4]{81}$

    3

Solve the following. Remember you can rewrite those problems that are subtractions as additions of the opposite.

11. $-27 - (-6)$

        -21

12. $-3 - 15$

        -18

13.   -6 +9

        3

Solve the following.

14. $\dfrac{(-6)(-4)(3)}{-8+-4}$

Work:

$$\frac{(-6)(-4)(3)}{-8+-4} = \frac{24(3)}{-12} = \frac{72}{-12} = -6$$

Answer: -6

15. $5 - 6\,(9 - 5)^2 + 28 \div 7 * 2$

Work:

$$5 - 6(9-5)^2 + 28 \div 7 * 2$$
$$= 5 - 6(4)^2 + 28 \div 7 * 2$$
$$= 5 - 6(16) + 28 \div 7 * 2$$
$$= 5 - 96 + 28 \div 7 * 2$$
$$= 5 - 96 + 4 * 2$$
$$= 5 - 96 + 8$$
$$= -91 + 8$$
$$= -83$$

Answer: -83

16. $(-16) * 4\,(-2) * (-3)$

Work:

$$(-16) * 4(-2) * (-3)$$
$$= -16 * 4 * -2 * -3$$
$$= -64 * -2 * -3$$
$$= 128 * -3$$
$$= -384$$

Answer: -384

Solve the following.

17. $\underline{(-4) \times (-15) \times 4}$
    $\quad (-6) \times 10$

Work:

$$\frac{(-4)*(-15)*4}{(-6)*10}$$
$$=\frac{60*4}{-60}$$
$$=\frac{240}{-60}$$
$$=-4$$

Answer: -4

18. $(7-13) + 6(3-7)^2 + \mathbf{24} \div 4 *2$

Work:

$$(7-13)+6(3-7)^2+24\div4*2$$
$$=-6+6(3-7)^2+24\div4*2$$
$$=-6+6(-4)^2+24\div4*2$$
$$=-6+6(16)+24\div4*2$$
$$=-6+96+24\div4*2$$
$$=-6+96+6*2$$
$$=-6+96+12$$
$$=90+12$$
$$=102$$

Answer: 102

19. $(991)^0$ 1

20. $\left| -23 \right|$ 23