Operations with Real Numbers

- PEMDAS
  - Parentheses (or absolute values)
  - Exponents
  - Multiplication/Division (left to right)
  - Addition/Subtraction (left to right)
- Absolute value
  - Distance from zero
  - Always positive unless the negative is on the outside
  - $|3| = 3$ $\quad |-3| = 3$

Ex. 1)

Evaluate the following expression when $x = 90$.

$$\frac{\sqrt{x-9}}{81}$$

A. $\frac{1}{9}$

B. 6561

C. 9

D. 1

$$\frac{\sqrt{90-9}}{81} = \frac{\sqrt{81}}{81}$$

$$\frac{9}{81} = \frac{1}{9}$$

| | ← means absolute value

Ex. 2)

Evaluate the following expression when $n = -12$.

$2|n + 10|$

A. 0

B. 4

C. 44

D. -4

$2|-12+10|$

$2|-2|$ → $|-2|$ is 2

$2(2)$

4

Change | | to ( )

Ex. 4)

Evaluate the following expression when $x = -13$ and $y = -14$.

$|9x^2 - 8y|$

A. 13801

B. 1633

C. 1409

D. 93302

$|9\cdot(-13)^2 - 8(-14)|$

$|9\cdot169 + 112|$

$|1521 + 112|$

$|1633|$

1633

Ex. 3)

Evaluate the following expression for $x = 122$.

$5\sqrt{x - 1} + 5$

A. 50

B. 60

C. 65

D. 55

$5\sqrt{122-1} + 5$

$5\sqrt{121} + 5$

$5(11) + 5$

$55 + 5$

60

Ex. 5)

Evaluate the following expression when $n = 3$.

$|n - 6| - |3 - n|$

A. -3

B. 3

C. -7

D. 5

$|3-6| - |3-3|$

$|-3| - |0|$

$3 - 0$

3

Ex. 6)

Evaluate the following expression for $m = 9$.

$$\sqrt{4m} + 12$$

A. 18

B. 0

C. 24

D. -6

$\sqrt{4 \cdot 9} + 12$

$\sqrt{36} + 12$

$6 + 12$

18