

MAT 104 Worksheet 1

September 1, 2004

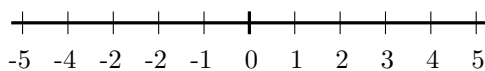
1. Factor each of the following integers into a product of prime numbers.

(a) $12 = 2^2 \cdot 3$

(b) $120 = 2^3 \cdot 3 \cdot 5$

(c) $1024 = 2^{10}$

2. Indicate the set $\{x \mid x < 2\}$ on the number line below.



3. Write the following numbers from smallest to largest. $|-3|$, -7 , $|-7|$, -3 .

$$-7 \qquad -3 \qquad |-3| = 3 \qquad |-7| = 7$$

4. Evaluate each of the following expressions.

(a) $4 - 6 + 3 = -2 + 3 + 1$

(b) $\sqrt{9} + \sqrt[3]{64} + \sqrt[4]{16} = 3 + 4 + 2 = 9$

(c) $\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

5. Simplify each expression.

(a)

$$\begin{aligned}(x^2)^3 &= (x^2)(x^2)(x^2) \\ &= (x \cdot x)(x \cdot x)(x \cdot x) \\ &= x^6\end{aligned}$$

(b) $x^2 \cdot x^3 = (x \cdot x)(x \cdot x \cdot x) = x^5$

(c)

$$\begin{aligned}(x + y)^2 &= (x + y)(x + y) \\ &= (x + y)x + (x + y)y \\ &= x^2 + xy + xy + y^2 \\ &= x^2 + 2xy + y^2\end{aligned}$$