Name:_____

MATH 150: QUIZ 1

1. Why are you taking MAT 150 over the summer?

2. Let a and b be real numbers. The *distance from a to b*, denoted $d(a, b)$ is

$$d(a, b) = \boxed{}.$$

3. Compute $d(-2, 7)$.

$$d(-2, 7) = \boxed{}.$$

4. Let $U = \{\text{Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday}\}$. Let $T = \{x \in U \mid x \text{ starts with the letter "T"}\}$. Express T using the *roster method*.

$$T = \boxed{}.$$

5. Simplify the expression $(x^5y^{-6})^7$, assuming x and y are positive. Express the answer so that all the exponents are positive.

Solutions

1. NA
2. $$d(a,b) = |b-a|.$$
3. $$\begin{aligned} d(-2,7) &= |7-(-2)| \\ &= |7+2| \\ &= |9| \\ &= 9. \end{aligned}$$
4. Recall that for roster method, we just list the elements of the set in curly braces.
$$T = \{\text{Tuesday, Thursday}\}.$$
5. I will show the solution two ways.
$$\begin{aligned} (x^5y^{-6})^7 &= \left(\frac{x^5}{y^6}\right)^7 \\ &= \frac{x^{5\cdot 7}}{y^{6\cdot 7}} \\ &= \frac{x^{35}}{y^{42}}. \end{aligned}$$
Alternatively,
$$\begin{aligned} (x^5y^{-6})^7 &= x^{5\cdot 7}y^{-6\cdot 7} \\ &= x^{35}y^{-42} \\ &= \frac{x^{35}}{y^{42}}. \end{aligned}$$