235 Quiz R   Name: _____ *key* _____

January 13, 2013

You have 30 minutes to complete this quiz. Notebooks are not permitted.
When you are finished you may leave or you can stay to ask questions after the quiz.

1. Determine whether each of the following statements is true or false.

2 pts each

10 pts

T (F) $\dfrac{a}{b+c} = \dfrac{a}{b} + \dfrac{a}{c}$ (note $\dfrac{8}{4+2} \neq \dfrac{8}{4} + \dfrac{8}{2}$)

(T) F $(x^2)^3 = x^6$ (since $(x \cdot x)(x \cdot x)(x \cdot x) = x \cdot x \cdot x \cdot x \cdot x \cdot x$)

(T) F $\dfrac{\frac{a}{b}}{c} = \dfrac{a}{bc}$ (since $\dfrac{a/b}{c} = \dfrac{a/b}{c/1} = \dfrac{a}{b} \cdot \dfrac{1}{c} = \dfrac{a}{bc}$)

T (F) $\sqrt{x^2 + 9} = x + 3$ (note $\sqrt{4^2 + 9^2} \neq 4 + 3$)

(T) F   The product of two rational numbers is always a rational number.   (since $\dfrac{a}{b} \cdot \dfrac{c}{d} = \dfrac{ac}{bd}$)
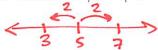
2. Fill in the blanks. You may write your work between the problems if you like, but I only be grading what you record in the blanks on the left.

__(3,7)__   Write the solution to $|x - 5| < 2$ in interval notation.

2 pts each

10 pts

__2__   If the exponential function $f(x) = Ca^x$ passes through the points $(0, 5)$ and $(3, 40)$, then what is the value of a?

$f(0) = 5 \implies 5 = Ca^0 = C \implies C = 5$
$f(3) = 40 \implies 40 = 5a^3$
$\implies 8 = a^3$
$\implies a = 2$ ($\sqrt[3]{8} = 2$)

__3__   What integer is equal to $\log_2 8$?

$\log_2 8 = x$ means $2^x = 8$ so $x = 3$

__$-\frac{1}{2}$__   What is the value of $\sin(-\frac{5\pi}{6})$?

__$\pi/4$__   What is the unique acute angle θ that satisfies $\cot\theta = 1$?
(or 45°)

$\cot\theta = 1 \implies \dfrac{\cos\theta}{\sin\theta} = 1 \implies \cos\theta = \sin\theta$

$\theta = \dfrac{\pi}{4}$

$\cos\theta = \sin\theta$ on this line

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