Daily Quiz 3 - Thursday, July 2, 2009

1. (5 points) State the quadratic formula.

Let $ax^2 + bx + c = 0$ be a quadratic equation with $a \neq 0$. Then, the solutions to this equation are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

2. (5 points) Which of the following graphs represent functions? Check all that apply.
3. (5 points) Solve: $|\frac{x - 3}{2}| > 1$.

We first note that we need $\frac{x - 3}{2}$ to be either more positive than 1 or more negative than -1.

\[
\begin{align*}
|\frac{x - 3}{2}| & > 1 \\
\frac{x - 3}{2} & < -1 \quad \text{OR} \quad \frac{x - 3}{2} > 1
\end{align*}
\]

\[
\begin{align*}
x - 3 & < -2 \\
x - 3 & > 2
\end{align*}
\]

So, our solution is $(-\infty, 1) \cup (5, \infty)$.

4. (5 points) Solve: $(y - 3)(y + 4) = 30$.

First, we must expand since we do not have 0 on the right-hand side.

\[
\begin{align*}
y^2 + y - 12 & = 30 \\
y^2 + y - 42 & = 0
\end{align*}
\]

We can factor this to get:

\[(y - 6)(y + 7) = 0.\]

So, our answer is then $y = 6, -7$.

Extra Credit: Name a make of car.