

MAT 201 Quiz 1

January 28, 2005

1. Put the inequality

$$-2 < x \leq 5$$

into interval notation.

$$(-2, 5]$$

2. Write the interval $[1, 3)$ as an inequality.

$$1 \leq x < 3$$

3. Solve the quadratic equation

$$6x^2 - 5x - 4 = 0$$

for x .

Since this quadratic factors, we will solve using this method. The quadratic formula will work as well, but it is a bit messier.

$$\begin{aligned} 6x^2 - 5x - 4 = 0 &\implies (2x + 1)(3x - 4) = 0 \\ &\implies 2x + 1 = 0 \text{ or } 3x - 4 = 0 \\ &\implies x = -\frac{1}{2} \text{ or } x = \frac{4}{3} \end{aligned}$$

4. Evaluate $\sin\left(\frac{7\pi}{6}\right)$.

The angle $\frac{7\pi}{6}$ is $\frac{\pi}{6}$ greater than π , so by knowing that $\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$ and that $\frac{7\pi}{6}$ will put the point in the third quadrant (where the second coordinate is negative, we have

$$\sin\left(\frac{7\pi}{6}\right) = -\frac{1}{2}$$

5. Find an equation of a line passing $(2, -1)$ with slope 3.

When the instructions say “Find an equation of a line ...”, you should automatically think of the point-slope form of the line

$$(y - y_1) = m(x - x_1)$$

where m is the slope of the line and (x_1, y_1) is any point on the line. For us, $m = 3$ and $(x_1, y_1) = (2, -1)$, so we get

$$(y - (-1)) = 3(x - 2)$$

or by simplifying a bit

$$y = 3x - 7$$